



Evolution of Strategic Foresight and Policy Making:

A Comparative Evaluation of
British and American Strategies for
National Emergency Crises

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Evolution of Strategic Foresight and Policy Making: A Comparative Evaluation of British and American Strategies for National Emergency Crises

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Abstract

Strategic foresight is a planning-oriented academic discipline that supports organisations in navigating uncertainty towards desirable futures. It focuses on identifying the most suitable driving forces and solutions prior to the formulation of strategies to address future opportunities and threats. Grounded in systematic analysis and anticipatory thinking, this approach serves as a decision-support tool, enabling nations to secure new forms of competitiveness and formulate long-term policy perspectives. Academic interest in the future and the formal study of foresight gathered pace following the 1929 Great Depression, amid a growing belief that the crisis might have been avoided with better anticipation and planning. In both the UK and the US, the end of the Second World War and the emergence of nuclear weapons spurred the growth of foresight research, particularly in national reconstruction and security strategy. Economists such as William Beveridge, with his 1942 post-war plan, and scientific initiatives like RAND's 1948 military planning programme, played leading roles. Despite incorporating foresight into its policy-making framework since the 20th century, the UK still faces significant challenges in addressing long-term issues effectively. Accordingly, this study seeks to propose a new conceptual framework and process model necessary to bridge the gap between theory and practice in the UK Government's strategic foresight approach. To this end, the research employs a comparative case study approach focused on the United Kingdom and the United States. Data were gathered and validated through semi-structured interviews with policymakers, practitioners, and international experts, alongside a detailed analysis of key policy documents. The inclusion of the US case explores whether its decentralised foresight model—particularly its integration of areas such as defence and security—can help address the constraints of the UK's traditionally centralised Westminster system. While both models have their respective strengths and limitations, the study considers whether the US approach offers greater policy flexibility, enhanced collaboration, and more inclusive, adaptive design. Ultimately, the study demonstrates the value of strategic foresight in public policy and proposes a refined, future-oriented framework tailored to the UK Government. It aims to contribute academically and practically, offering actionable models for long-term, sustainable foresight initiatives. It also examines how persistent implementation barriers may be overcome through evolving practice and the development of resilient, adaptive governance frameworks.

Impact Statement

This research offers a substantive contribution to bridging the gap between theory and practice in strategic foresight by introducing two empirically grounded models—a practice-oriented model and a science-based model—designed to enhance the institutional effectiveness of national foresight systems. Through comparative analysis of the United States and the United Kingdom, the study provides actionable frameworks that support innovation in public governance. In an era marked by heightened complexity and uncertainty, these findings inform anticipatory policy design and strategic planning.

Practice Impact

The proposed models offer practical mechanisms to strengthen the operational deployment of foresight in the public sector. Model A embeds feedback systems, internal capacity-building, and professional training to facilitate continuous organisational learning. Model B emphasises integrated qualitative–quantitative analysis, improved strategic communication, and interdepartmental collaboration. These structures support the embedding of foresight into routine policy operations, enabling adaptive, outcome-oriented practice beyond abstract forecasting. The study thus provides a scalable foundation for agile and replicable foresight implementation.

Policy Impact

Rather than treating foresight as a peripheral analytical tool, this research positions it as a core component of the policy cycle—linking scenario-based planning to performance management and long-term coherence. By promoting science–policy integration and strategic neutrality, the models help counter short-termism and fragmentation. Policymakers are thus offered a framework for deploying foresight as a durable institutional resource for navigating risk and complexity.

Governmental Impact

This study proposes a system-level infrastructure for embedding foresight within government. Drawing on the decentralised US model and adapting it to the UK’s centralised context, it outlines pathways for enhancing national resilience, agility, and cross-agency intelligence. By integrating foresight into budgeting, talent development, and strategic doctrine, it transitions foresight from isolated projects to a long-term, institutionalised function. This offers timely guidance for governments facing compound crises and geopolitical volatility.

Ultimately, the study redefines strategic foresight as a foundational element of national strategy and governance reform. By offering transferable models and cross-national insights, it equips decision-makers with the tools to embed foresight more deeply into institutional processes—enhancing strategic adaptability, policy sustainability, and long-term public value.

Statement of Originality

I, Yuna Lee, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Index of Figures

Figure 1 The ROAMF Performance Management Model -----	55
Figure 2 The Futures Cycle mapped to the ROAMF model -----	59
Figure 3 Harold Lasswell’s Seven Stages of the Policy-Making Process (1956) -----	92
Figure 4 Research Process of the Study -----	121
Figure 5 Conceptual Model of a USDA Horizon Scanning System -----	183
Figure 6 The Forest Futures Horizon Scanning process -----	191
Figure 7 The Wildland Fire Management Foresight Panel Process -----	197
Figure 8 The USCG Strategic Framework -----	208
Figure 9 The Maritime Domain Awareness (MDA) Timeline and the Long View Project -	211
Figure 10 Simplified Evergreen Logic Model -----	220
Figure 11 Stressors-and-Shocks Framework Steps -----	224
Figure 12 Notional Causal Chain from Drivers to Effect on USCG Missions -----	225
Figure 13 Example of a Scenario Family for the Workforce Decision Space -----	227
Figure 14 Combining Scenario Families into a Single Multidimensional Future Scenario Narrative -----	227
Figure 15 Timeline of Evergreen V Events and Products, 2018-2022 -----	233
Figure 16 Defence Futures (Formerly DCDC, 2024) in Strategic Command, MOD -----	240
Figure 17 Integration Design Authority Organisational Framework -----	241
Figure 18 Chronology of the UK GST, the US GT and NATO SFA -----	248
Figure 19 The Structure of the UK National Foresight Projects. Source -----	276
Figure 20 Chronological Timeline of UK Foresight Projects -----	286
Figure 21 Chronology of the UK GST, the US GT and NATO SFA -----	318
Figure 22 Abstract of a Traditional UK Futures Framework -----	330
Figure 23 Newly Refined Model A -----	333
Figure 24 Newly Refined Model B -----	338

Index of Tables

Table 1 A Schematic Illustration of the Evolution of UK Foresight -----	49
Table 2 UK and US Leaders and Political Parties Since 1945: A Comparative Overview ----	66
Table 3 Mapping of Mechanisms and Theoretical Frameworks -----	107
Table 4 Key Characteristics of Explanatory Case Studies by Yin (2014) -----	119
Table 5 Key Characteristics of Explanatory Case Studies by Eisenhardt (1989) -----	120
Table 6 List of UK Case Interview Participants -----	127
Table 7 List of US Case Interview Participants -----	129
Table 8 Foresight Methods Used by the US Federal Agencies (Greenblott et al., 2018) -----	138
Table 9 The Phases of Project Evergreen -----	212
Table 10 Personnel Composition of Defence Futures -----	243
Table 11 Overview of GST Editions and Key Developments (2003–2024) -----	249
Table 12 Timeline of the US GT and the UK GST Series -----	321
Table 13 Evolving Policy Frameworks: Lasswell to Strategically Adaptive Model A & B -	352

Abbreviations and Acronyms

BOP: Bureau of Prisons

BSEE: Bureau of Safety and Environmental Enforcement

CBA: Cost-Benefit Analysis

CCF: Congressional Clearinghouse on the Future

CIA: Central Intelligence Agency

CIF: Congressional Institute for the Future

COP: Community of Practice

CRS: Congressional Research Service

CSF: Centre for Strategic Futures * Both the US and Singapore have government bodies bearing the same name

CEA: Cost-Effectiveness Analysis

CPB: Netherlands Bureau for Economic Policy Analysis

CSA: Chief Scientific Adviser

DLUHC: Department for Levelling Up, Housing and Communities

DEFRA: Department for Environment, Food and Rural Affairs

DfT: Department for Transport

DHS: Department of Homeland Security

DMDU: Decision Making under Deep Uncertainty

DOD: U.S. Department of Defense

DOE: Department of Energy

DSIT: Department for Science, Innovation and Technology

EPA: Environmental Protection Agency

EU: European Union

FBI: Federal Bureau of Investigation

FEMA: Federal Emergency Management Agency

FFCOI: Federal Foresight Community of Interest

FIRST: Futures Information Retrieval System

FMD: Foot and Mouth Disease

FRG: Futures Research Group

GAO: Government Accountability Office

GCSA: Government Chief Scientific Adviser

GST: Global Strategic Trends

GT: Global Trends (reports/series)

GO-Science: Government Office for Science
HSOAC: Homeland Security Operational Analysis Center
ICBMs: intercontinental ballistic missiles
KPIs: Key Performance Indicators
MioIR: Manchester Institute of Innovation Research
MOD: Ministry of Defence
NASA: National Aeronautics and Space Administration
NEPA: National Environmental Policy Act
NGA: National Geospatial- Intelligence Agency
NGB: National Guard Bureau
NIC: National Intelligence Council
NISTEP: Japan's National Institute of Science and Technology Policy
ODNI: Office of the Director of National Intelligence
OMB: Office of Management and Budget
ONA: Office of Net Assessment
OPM: Office of Personal Management
OST: Office of Science and Technology
PBL: Netherlands Environmental Assessment Agency
POST: Parliamentary Office of Science and Technology
ROAMEF: Rationale–Objectives–Appraisal–Monitoring–Evaluation–Feedback
PREST: Public Policy Research in Engineering, Science and Technology
SPEL: Strategic Planning and External Liaison
STAA: Science, Technology Assessment, and Analytics
STS: Science, Technology, and Space
TA: Technology assessment
USAF: US Air Force
USCG: US Coast Guard
USDA: US Department of Agriculture
USFS: US Forest Service
USMC: US Marine Corps
VA: Veterans Affairs
WWII: Second World War, World War II

Table Of Contents

Abstract	3
Impact Statement	4
Statement of Originality	5
Acknowledgements	5
Index of Figures	6
Index of Tables	7
Abbreviations and Acronyms	8
 CHAPTER 1 INTRODUCTION	16
 1.1 Research Background	16
1.1.1 The Importance of Understanding the Future and Historical Efforts	16
1.1.2 The Distinction Between Strategic Foresight, Prediction, and Forecasting	17
1.1.3 Trends in Futures Research and National Strategic Foresight	19
1.1.4 The UK's Journey in Strategic Foresight	20
1.2 Research Questions	21
1.3 Research Aims and Objectives	23
1.4 Structure of this study	25
 CHAPTER 2 LITERATURE REVIEW 1: CONCEPTUAL FOUNDATION OF STRATEGIC FORESIGHT IN POLICYMAKING	26
 2.1 Introduction	26
2.2 What is Foresight? The Nature of Strategic Foresight	27
2.2.1 Conceptual Definition of Strategic Foresight	27
2.2.2 Conceptual Diversity and the Integration of Foresight within Governmental Contexts	29
2.3 Foresight is Not Prediction nor Forecasting	31
2.3.1 Limitations of Prediction and Forecasting	31
2.3.2 The Growing Importance of Foresight	33
2.4 Origins of the term 'Foresight' and A rise in popularity	34

2.4.1 The Historical Foundations of Foresight -----	34
2.4.2 Post-World War II: Institutionalisation of National Foresight Research -----	35
2.4.3 Herman Kahn and Strategic Foresight in the Cold War Era -----	36
2.4.4 Post-1960s: The Expansion of Foresight in Economic and Corporate Strategy Development -----	37
2.4.5 21st Century: Global Uncertainty and the Evolution of National Foresight Trends -----	39
2.5 The Role of Foresight in Government and Policymaking -----	40
2.5.1 Core Elements of Strategic Policy Foresight -----	40
2.5.2 Theoretical Approaches to Strategic Foresight -----	41
2.5.3 The Significance of Integrating Strategic Foresight into Policy Decision-Making -----	42
2.6 Conclusion -----	44

CHAPTER 3 LITERATURE REVIEW 2: TRADITION AND REFORM OF BRITISH POLICYMAKING FOR STRATEGIC FORESIGHT ----- 46

3.1 Introduction -----	46
3.2 The Westminster Model's Barrier to Innovation -----	47
3.3 Historical Evolution of the UK Foresight Programme -----	48
3.4 The UK's ROAMEF Framework: Application to Strategic Foresight Initiatives -----	53
3.4.1 The Six Phases of the ROAMEF Framework -----	53
3.4.2 The Function and Role of the ROAMEF Policy Cycle -----	55
3.4.3 The ROAMEF Policy Cycle in the UK National Foresight Projects -----	57
3.5 Challenges of the ROAMEF Framework -----	59
3.5.1 Inherent Limitations of the ROAMEF Model in Complex Systems -----	60
3.5.2 Westminster Model as a Constraint on Long-term Strategic -----	61
3.5.3 Interplay between ROAMEF, Westminster Constraints, and Complex Systems --	62
3.6 Conclusion -----	63

CHAPTER 4. LITERATURE REVIEW 3: NATIONAL STRATEGIC FORESIGHT IN THE UNITED STATES -----65

4.1 Introduction	65
4.2 Cold War Era: Foresight and National Security (1945–1991)	67
4.3 The Environmental Foresight Era: 1970s–1990s	70
4.4 The Rise of Global Foresight: 1990s–Present	73
4.5 Why the United States Was Selected as a Comparative Case to the United Kingdom ----	77
4.6 Conclusion	79

CHAPTER 5 THEORETICAL FOUNDATIONS: STRATEGIC FORESIGHT FOR MANAGEMENT & EXECUTIONS ----- 81

5.1 Introduction	81
5.2 Policymaking Systems are Complex Systems	82
5.2.1 Embracing Complexity in Policy Practice and Process Models	83
5.2.2 Key Enhancements for Complexity-Aware Frameworks	84
5.3 Strategic Management Perspectives on Institutionalising Foresight	85
5.3.1 Strategic Management Theory and the Institutionalising of Foresight	86
5.3.2 Comparative Implications: The US and the UK	89
5.4 Revisiting Lasswell’s Decision Process Legacy	90
5.4.1 Lasswell’s (1956) Seven Functional Categories of Decision-Making	91
5.4.2 Lasswell’s Contribution to Policy Sciences and Its Positive Impact	92
5.4.3 Evaluating Lasswell’s Decision Process: Extensions, Critiques, and Alternative Approaches	94
5.5 Comparing Lasswell’s Legacy and UK Futures Framework	96
5.5.1 Rationale for Comparing Lasswell and UK Futures Framework	96
5.5.2 Connecting Lasswell’s Legacy to New UK Futures Framework	97
5.6 Structuring the New Mechanistic Foundation for the UK Futures Framework	99
5.6.1 Designing New Strategy for Mission Implementation & Support, Evaluation, and Talent Development	99
5.6.2 Linking the Complexity and Laswell’s Legacy	100
5.6.3 Linking the Strategic Management	102
5.6.4 Convergence of Theories of Policy decision-making and Strategic Management -	103
5.7 Conclusion	108

CHAPTER 6 METHODOLOGY ----- 110

6.1 Introduction -----	110
6.2 Research Strategy -----	111
6.2.1 Case study -----	112
6.2.2 Interview -----	116
6.3 Research Design -----	118
6.3.1 Typologies Based on Research Objectives and Approaches -----	118
6.3.2 Research Process -----	121
6.4 Case Selection -----	124
6.5 Data Collection -----	126
6.5.1 Data Collection for the UK Case -----	126
6.5.2 Data Collection for the US Case -----	128
6.6 Data Analysis -----	130
6.6.1 Comparative Case Analysis -----	130
6.6.2 Triangulation -----	131
6.7 Conclusion: Integration and Contributions of the Methods -----	132
 CHAPTER 7 RESEARCH & FINDINGS 1: STRATEGIC FORESIGHT IN THE US GOVERNMENT -----	134
7.1 Strategic Foresight in the Executive Branch -----	134
7.1.1 The State of Strategic Foresight within the U.S. Executive Branch -----	135
7.1.2 Approaches to Strategic Foresight used by US Federal Organisations -----	137
7.1.3 Finding 1: Strong Leadership -----	140
7.1.4 Finding 2: The Strategic Value of External Expertise -----	142
7.1.5 Finding 3: Internal Staff Training -----	143
7.1.6 Concluding Implications: A Three-Pillar Assessment -----	145
7.2 Strategic Foresight in the Legislative Branch -----	147
7.2.1 A Historical Overview: The case of CRS, CCF, and CIF Initiatives-----	148
7.2.2 The State of Strategic Foresight within the U.S. Legislature: The case of GAO and FFCOI-----	157
7.2.3 Concluding Implications: A Three-Pillar Assessment -----	163
7.3 Strategic Foresight in the State Government -----	166
7.3.1 Foresight Activities of State Governments -----	166
7.3.2 Comparative Analysis: State vs. Federal Foresight Approaches -----	173
7.3.3 Concluding Implications: A Three-Pillar Assessment -----	175
7.4 Conclusion -----	177

CHAPTER 8 RESEARCH & FINDINGS 2: UNITED STATES CASES -----179

8.1 The USDA Forest Service’s “Forest Futures” Horizon Scanning Project -----	179
8.1.1 Vision and Core Focus of The USDA Forest Service for Strategic Foresight ----	
-----	180
8.1.2 Core Mechanism of the USDA Forest Service’s Horizon Scanning System ---	183
8.1.3 Case 1: The Forest Futures Horizon Scanning Project (2019) -----	189
8.1.4 Case 2: Wildland Fire Management Futures (2015) -----	196
8.1.5 Collaboration with Domestic Federal Bodies and International Networks ----	201
8.1.6 Concluding Implications: A Three-Pillar Assessment -----	202
8.2 The USCG “Evergreen” Strategic Foresight Project -----	205
8.2.1 Vision and Foresight Objectives of the USCG Project Evergreen-----	206
8.2.2 Historical Evolution of the Evergreen project -----	209
8.2.3 USCG Project Evergreen’s Structure and Process Cycles -----	216
8.2.4 The Case of the USCG Evergreen V (2016–2022) -----	218
8.2.5 Concluding Implications: A Three-Pillar Assessment -----	234
8.3 Conclusion -----	236

CHAPTER 9 RESEARCH & FINDINGS 3: UNITED KINGDOM CASES ----- 238

9.1 Defence Futures in the in the UK Ministry of Defence -----	239
9.1.1 Vision and Strategic Foresight Strategy of the MOD Defence Futures -----	241
9.1.2 Core Output of Strategic Foresight: Global Strategic Trends -----	242
9.1.3 The Case of Global Strategic Trends 7th Edition -----	255
9.1.4 Implications for National Security and International Alliances-----	263
9.1.5 Concluding Implications: A Three-Pillar Assessment -----	264
9.2 Urban Futures in the UK Government Office for Science -----	269
9.2.1 The Institutionalisation of the Contemporary UK Foresight Programme ----	270
9.2.2 The Structure and Decision-making Process -----	274
9.2.3 GCSA’s Leadership: The Role, Functions, and Impacts -----	277
9.2.4 The Case of Foresight Programme: Future of Cities Project -----	287
9.2.5 Concluding Implications: A Three-Pillar Assessment -----	296
9.3 Conclusion -----	299

CHAPTER 10 DISCUSSION	302
10.1 Introduction	302
10.2 Comparative Evaluation: Towards New Mechanisms of Strategic Foresight	303
10.2.1 The UK Foresight Programme and Strategic Foresight in US Federal Agencies	304
10.2.2 Strategic Outlooks Compared: MOD's GST and NIC's Global Trends	317
10.3 Alternative Mechanisms	330
10.3.1 Newly Refined Model A: Adopting a Practice-Oriented Foresight Mechanism	333
10.3.2 Newly Refined Model B: A Science-Based Strategic Foresight Execution	337
10.4 Conclusion	343
CHAPTER 11 CONCLUSION	345
11.1 Introduction	345
11.2 Return to the Research Questions and Response	346
11.3 Conceptual Framework Contributions	349
11.4 Implications of This Study for Futures Studies	353
11.5 Limitations of the Research	354
11.6 Next Steps in Research	355
REFERENCES	357
APPENDICES	376
Appendix A - Summary of Interviewee Profiles	376
Appendix B - Detailed Interviewee Profiles and Key Discussion Points	378
Appendix C - Interview Protocol Samples	406
Appendix D - Interview Participant Information Sheet Sample	408
Appendix E - Interview Consent Form Sample	409
Appendix F - Ethics Approval Letter	410

Chapter 1. Introduction

This chapter sets out the overarching context and conceptual foundation of the study. It elucidates the rationale for investigating the application of strategic foresight within the domain of public policy, with particular emphasis on a comparative evaluation of governmental practices in the United Kingdom (UK) and the United States (US). Central to this discussion are several key conceptual dimensions, including the significance of anticipating the future and historical efforts to do so; the distinction between strategic foresight, prediction, and forecasting; prevailing trends in futures studies; and the evolution of national strategic foresight frameworks. The chapter will also offer a concise account of the UK's trajectory in institutionalising strategic foresight as a response to the growing complexity of contemporary policy environments. Subsequently, the research problem is articulated, followed by the formulation of specific research questions and a clear statement of the study's aims and objectives. The chapter concludes with an outline of the thesis structure, providing the reader with a roadmap for the analytical journey that follows.

1.1 Research Background

“Change is not merely necessary to life – it is life. Foresight is the tool that helps us prepare for and navigate change.” - Alvin Toffler (1970)-

1.1.1 The Importance of Understanding the Future and Historical Efforts

Understanding the future has always been a vital component of human survival, adaptation, and progress in a rapidly changing world. Historically, the effort to comprehend the future originated from the primal instinct to survive. Early humans sought to predict environmental changes, weather conditions, and resource scarcity to inform strategies for hunting, agriculture, and migration (Bell, 1997; Cornish, 2004). In ancient civilizations, prophets, astrologers, and philosophers contributed to societal stability and the maintenance of power by attempting to foresee the future. For instance, pharaohs in ancient Egypt relied on astrological insights to

make critical political decisions (Boulding, 1988). The Industrial Revolution marked a turning point by accelerating technological change, thereby heightening the need to anticipate economic and social impacts and laying the foundation for modern futures studies (Toffler, 1970; Cornish, 2004). The 20th century, in particular, witnessed a significant acceleration in futures research, driven by the strategic imperatives of two World Wars and the Cold War. During this period, the RAND Corporation pioneered scenario planning and systems analysis methodologies, establishing the groundwork for contemporary futures studies (Kahn, 1960; Ghamari-Tabrizi, 2005; Masini, 1993; Wack, 1985).

Kuosa (2012) identifies three key reasons why the future holds such importance. Firstly, while the future inherently encompasses uncertainty, preparing for it is fundamental to survival and success. Futures research systematically analyses these uncertainties, enabling organisations and governments to adapt and prepare effectively. Secondly, insights into the future are indispensable for organisations, governments, and individuals to set long-term goals, pursue sustainability, and foster innovation—imperatives that grow even more critical in a modern society characterised by rapid and expansive change. Thirdly, futures research serves as a tool to minimise risks and maximise opportunities in addressing complex social, economic, and technological challenges. This is particularly crucial in navigating the multifaceted challenges arising from globalisation and technological advancement.

Schwartz (1996) underscores that foresight is not limited to predicting a single future but rather involves exploring a range of possibilities, equipping organisations and governments to prepare for multiple outcomes. He highlights the role of scenario planning in enabling policymakers to develop contingency plans for various potential futures, thereby maintaining flexibility and adaptability in uncertain conditions. This approach is particularly significant for managing complex issues such as climate change, technological disruptions, and social instability. Integrating foresight into policymaking represents a departure from traditional predictive practices, signifying an evolution towards dynamic and collaborative processes grounded in long-term thinking and participatory approaches. Such integration facilitates the development of more comprehensive and actionable policies by fostering cooperation among a wide range of stakeholders.

1.1.2 The Distinction Between Strategic Foresight, Prediction, and Forecasting

Strategic foresight fundamentally differs from prediction and forecasting in its purpose and approach. Prediction primarily focuses on identifying specific outcomes based on existing data and trends, often relying on deterministic methodologies. Forecasting, on the other hand, employs statistical and scientific tools to analyse historical patterns and generate probable future scenarios (Bishop and Hines, 2007; Bell, 1997). While both methods offer valuable insights, their emphasis on linear trends limits their ability to address nonlinear disruptions or manage multiple uncertainties.

Foresight, by contrast, adopts a broader and more exploratory perspective. It is underpinned by a philosophy of proactively shaping the future by resolving uncertainties and seizing opportunities (Slaughter, 1995). Unlike prediction, foresight identifies diverse possibilities and fosters participatory dialogue among policymakers, experts, and stakeholders. This adaptability and inclusivity render foresight a critical tool for addressing complex and long-term challenges, while simultaneously fostering innovation and collaboration.

The term "foresight" was introduced to signify a strategic mode of thinking that extends beyond prediction and forecasting, aimed at actively exploring and preparing for the future. The concept gained prominence during the mid-20th century, following advancements in scenario planning and systems analysis by institutions such as the RAND Corporation (Kahn, 1960; Ghamari-Tabrizi, 2005). Scholars such as Peter Schwartz and Pierre Wack further developed scenario-based approaches, institutionalising foresight methodologies within organisations and governments (Schwartz, 1996; Wack, 1985).

Strategic foresight builds upon these foundations by aligning foresight activities with specific policy, organisational, or national strategic objectives (Kuosa, 2012). This approach enables futures research to be executed in a more systematic and goal-oriented manner. Strategic foresight integrates long-term perspectives into the initial stages of policy formation and implementation, enhancing organisational agility and adaptability while maintaining a competitive edge in dynamic environments (Voros, 2003; Ramirez and Wilkinson, 2016).

Strategic foresight, and foresight more broadly, play several vital roles. First, they produce future scenarios that reflect diverse possibilities and uncertainties, supporting proactive preparation. Second, they help organisations and governments define long-term visions that drive sustainability and innovation. Third, they enable early identification of potential risks and the maximisation of opportunities through strategic planning. Fourth, they embed a future-oriented perspective into decision-making, enhancing policy outcomes. Finally, they foster

dialogue among diverse stakeholders, generating deeper insights and actionable strategies" (Slaughter, 1995; Schwartz, 1996; Kuosa, 2012).

1.1.3 Trends in Futures Research and National Strategic Foresight

Futures research and strategic foresight have evolved differently across the US, Europe, and the UK, reflecting their distinct political systems, cultural contexts, and policy priorities. The US concentrated on defence and technological innovation during the Cold War (Kahn, 1962; Masini, 1993), while Europe emphasised sustainability and multilateral cooperation (European Commission, 2021). The UK, as the focal case of this study, endeavoured to integrate scientific and technological advancements with solutions to pressing societal challenges (Miles and Keenan, 2002; 2003).

In the US, the post-World War II era saw the RAND Corporation emerge as a hub for defence and technological innovation, establishing the foundations of strategic foresight. RAND played a pioneering role in institutionalising futures research by developing methodologies such as scenario planning and systems analysis (Wack, 1985; RAND Corporation, 2005). Among its prominent contributors was Herman Kahn, who applied foresight techniques to Cold War military strategy and nuclear deterrence theory (Kahn, 1962). Kahn's work extended beyond military applications to explore broader opportunities in science, technology, policy analysis, and economic modelling, opening new avenues for futures research. Andrew Marshall, another influential figure at RAND, further advanced strategic forecasting by focusing on the intersection of global challenges and policy solutions (Masini, 1993; Krepinevich and Watts, 2015; Krepinevich, 2019). Drawing on his RAND experience, Marshall became the inaugural director of the Office of Net Assessment (ONA) within the U.S. Department of Defense (DOD), where he led long-term evaluations of military strategies for over four decades. His work emphasised the importance of innovation in military technologies, doctrines, and organisational concepts, while underscoring the critical value of a long-term perspective (Krepinevich and Watts, 2015; Krepinevich, 2019). Collectively, the US' strategic foresight efforts extended beyond military strategy to enable the country to adapt to and compete within an increasingly complex global environment.

In Europe, foresight initiatives have centred on sustainability and multilateral cooperation at both national and regional levels. European foresight activities began in the mid-20th century, with the Limits to Growth report, published by the Club of Rome in 1972, marking a pivotal moment in European futures research (Meadows et al., 1972). This report highlighted long-

term global challenges such as population growth, resource depletion, and environmental degradation, advocating for policy interventions to ensure sustainability. Building on these foundations, the European Union (EU) has prioritised foresight as a means of addressing complex societal challenges, including sustainability, digital transformation, and climate change. The EU's Horizon Europe programme exemplifies this commitment by fostering scientific research and innovation while employing a multi-layered collaborative framework to establish and implement long-term visions and goals (European Commission, 2021). Additionally, EU member states have implemented national-level foresight programmes that leverage data-driven analyses, scenario planning, and continuous monitoring to inform long-term policy design. These efforts aim to provide models not only for addressing regional issues but also for responding to global challenges, thereby laying the groundwork for sustainable development.

1.1.4 The UK's Journey in Strategic Foresight

The UK's engagement with strategic foresight began with *Realising Our Potential: A Strategy for Science, Engineering, and Technology* (1993), which laid the foundation for the Foresight Programme launched in 1994 (Miles and Keenan, 2002; 2003). Led by the Office of Science and Technology (OST), the programme was initially designed to leverage science and technology for national competitiveness while addressing long-term societal challenges. Over time, it has undergone three major phases of development, expanding and refining its framework to build a modern foresight system.

The current UK Foresight Programme articulates several core aims. First, it strives to design long-term strategies that transcend political cycles, enabling policy responses to complex challenges such as climate change, demographic ageing, and technological disruption. Second, it reinforces policy credibility through evidence-based approaches grounded in scientific data and trend analyses, while promoting collaboration. Third, it facilitates participatory governance by engaging stakeholders across government, academia, industry, and civil society. Fourth, it employs scenario planning to develop adaptive policies responsive to uncertainty. Fifth, it uses horizon scanning to detect emerging trends and technologies, supporting innovation and competitiveness. Lastly, it promotes interdepartmental collaboration to enhance coherence, reduce redundancies, and ensure resource efficiency (Miles and Keenan, 2002; 2003).

Nonetheless, the programme faces persistent criticisms. First, long-term foresight is often sidelined by short-term political priorities. Second, foresight outputs are seldom integrated into policy implementation and monitoring, weakening their practical impact. Third, interdepartmental silos hinder coherent policymaking. Fourth, limited resources and a shortage of skilled staff constrain foresight quality and continuity. Fifth, insufficient engagement with diverse actors, including local communities and SMEs, has narrowed representativeness. Lastly, a lack of robust feedback mechanisms has made it difficult to assess foresight effectiveness or adjust strategies accordingly.

The COVID-19 pandemic serves as a salient case, exposing these limitations. Despite having produced reports on global pandemics and their implications (GO-Science, 2006), foresight outputs were not adequately integrated into crisis response. Long-term recommendations were undermined by political short-termism, limited implementation capacity, and coordination failures. This highlights unresolved structural challenges in the UK's foresight system. Addressing these requires reforms that bolster implementation, coordination, resource management, and evaluation mechanisms (Diamond and Laffin, 2024). While COVID-19 reaffirmed foresight's value, it also underscored the effort still needed to translate vision into action. To be effective, the UK Foresight Programme must bridge the gap between theory and practice.

The following section introduces the core research questions of this study, grounded in these observations.

1.2 Research Questions

Government-led strategic foresight has emerged as an indispensable tool for addressing complex and unpredictable challenges such as globalisation, technological innovation, and environmental change. It enables governments to systematically manage potential disruptions and design sustainable, long-term policies (Kuosa, 2012). Challenges such as climate change, demographic ageing, and technological disruption are difficult to resolve through short-term measures alone, necessitating a systematic and forward-looking approach (Bell, 1997; Slaughter, 1995). Recognising this imperative, the UK established the Foresight Programme in 1994 to support long-term policy planning. The programme aims to enhance the credibility and legitimacy of evidence-based policymaking through scientific analysis and trend monitoring,

while fostering multi-layered collaboration to incorporate diverse stakeholder perspectives (Miles and Keenan, 2002; 2003).

Despite its aspirations, critiques of UK government policymaking over the past 25 years point to a persistent gap between theory and practice that undermines the effectiveness of foresight activities. The UK's foresight initiatives have not been immune to such limitations. This gap is driven by multiple factors, including the complexity of policymaking processes, political short-termism, institutional constraints, and cultural dynamics. For example, during the COVID-19 pandemic, the UK government failed to translate foresight findings into effective action, despite the existence of relevant reports and scenarios. This failure underscores the disconnect between planning and execution, reinforcing the need for a more integrated and implementable approach.

The UK's difficulty in operationalising foresight stems largely from the inherent complexity of its policy environment. Cairney and Kippin (2023) note that the UK's policymaking system is characterised by fragmentation and overlapping jurisdictions, particularly between central and local government. These structural ambiguities, coupled with inadequate interdepartmental coordination, have hindered the consistent integration of the Foresight Programme's long-term goals into practical policy (Cairney and Kippin, 2023).

Political short-termism further limits foresight's utility. The five-year electoral cycle often shifts focus towards short-term political gains, deprioritising long-term objectives such as climate adaptation and technological resilience. As Flinders et al. (2024) observe, this systemic constraint impedes the implementation of foresight strategies, particularly in times of political volatility.

Institutional and cultural barriers also obstruct foresight's practical integration. Interdepartmental silos, fragmented decision-making, and limited stakeholder engagement have reduced policy coherence and inclusivity. Cairney et al. (2024a) argue that without broader societal representation, foresight outcomes may skew towards elite perspectives. The COVID-19 crisis starkly exposed these weaknesses. Despite foresight reports on global pandemics, a lack of cross-sectoral coordination prevented meaningful application of such insights (Diamond and Laffin, 2024).

These limitations underscore the need for foresight to move beyond agenda-setting and provide concrete strategies, implementation pathways, and robust monitoring frameworks. Political

leadership, institutional restructuring, and cultural change are essential to embedding foresight into the core of policymaking processes.

Against this backdrop, this study examines why UK government foresight initiatives have failed to close the theory-practice gap and explores potential solutions to enhance the operational impact of strategic foresight as a tool for sustainable and forward-looking governance.

Central research question:

What lessons can be drawn from the evolution of strategic foresight practices within the US government, and how might an integrated conceptual framework and process model—grounded in exemplary cases from both the US and the UK—be developed to bridge the gap between theory and application, thereby enabling more effective implementation in public governance?

Sub-Research Questions:

- What are the primary limitations and barriers encountered in the implementation of the UK's strategic foresight approach?
- What actionable success factors and improvements from other nations, particularly from the US, can the UK benchmark for its strategic foresight practices?

1.3 Research Aims and Objectives

This study aims to develop a conceptual framework and process model to enhance the effectiveness of the UK government's strategic foresight activities by bridging the gap between theory and practical application. Strategic foresight is a forward-looking discipline that helps organisations navigate uncertainty and identify drivers and solutions for shaping a desirable future. In an increasingly complex and uncertain global environment, government-led strategic foresight has emerged as a critical tool for addressing long-term challenges and designing sustainable policies.

Although the UK government has incorporated foresight into its policymaking processes since the 20th century, a significant gap persists between planning and execution, particularly in tackling long-term challenges such as climate change, demographic ageing, and technological innovation. Centralised policymaking processes, the influence of short-term political cycles, and limited stakeholder engagement have been identified as key factors undermining the effectiveness of foresight activities. To address these issues, this study analyses the structural constraints of the UK's policymaking framework and compares them with lessons drawn from the US.

The inclusion of the US case study is particularly pertinent for examining how the decentralised approach of the US addresses the limitations of the UK's Westminster model. In contrast to the centralised policymaking structures of the UK, the US adopts a more decentralised approach, integrating multidimensional factors such as defence and security while fostering broad stakeholder participation. This decentralised approach enhances the flexibility of policy implementation and facilitates the development of adaptive strategies in response to dynamic environments. While the US model is not without its limitations, it provides valuable insights into how the UK might reform its foresight framework to improve execution and overcome its structural and institutional challenges.

This research employs a mixed-methods approach, focusing on single and comparative case studies of the UK and the US. Data collection includes semi-structured interviews with current and former policymakers, practitioners, and global experts, as well as archival data on foresight activities in US government agencies and insights from partner nations such as Singapore and Finland.

Ultimately, this study seeks to provide actionable and strategic insights that address the structural, institutional, and cultural barriers facing the UK government's foresight initiatives. By narrowing the gap between foresight theory and practice, the UK government could more effectively respond to long-term environmental changes and societal challenges. Furthermore, evidence-based policymaking and flexible implementation frameworks would enhance national competitiveness and enable the UK to assume a leadership role in addressing global challenges. This shift not only promises to refine the UK's policymaking structures but also positions the country as a model for sustainable development and international collaboration.

1.4 Structure of this study

This thesis is structured into eleven chapters.

Chapter 1 (Introduction) provides an overall overview of the study, outlining the background, the research problem and questions, as well as the aims and objectives of the research. The (Literature Review), which examines the origins and historical development of foresight, along with an analysis of contemporary policy processes in the US and the UK, is presented sequentially across Chapters 2, 3, and 4. Chapter 5 (Theoretical and Conceptual Framework) sets out the theoretical foundations and conceptual lenses that underpin the research. Chapter 6 (Methodology and Case Selection) provides a comprehensive account of the research design, including case selection rationale and the methods employed for data collection and analysis. Chapters 7, 8, and 9 (Research and Findings) present the core empirical analysis of the study. Chapter 7 (Research & Findings 1: Strategic Foresight in the US Government) provides an in-depth exploration of foresight practices across different levels of the US government. It traces the historical development of governmental foresight from the Cold War era to contemporary issues such as climate change and space missions, and examines its application within the executive, legislative, and state branches. Chapter 8 (Research & Findings 2: US Cases) focuses on two specific foresight initiatives within US federal agencies. It analyses the USDA Forest Service's "Forest Futures" horizon scanning project and the US Coast Guard's "Evergreen" strategic foresight programme, offering insight into how foresight is operationalised within distinct institutional settings. Chapter 9 (Research & Findings 3: UK Cases) turns to the UK context, analysing foresight initiatives in the areas of defence and urban development. This chapter investigates the "Defence Futures" and "Urban Futures" projects to assess how strategic foresight is embedded in British public policy and planning. Chapter 10 (Discussion) provides an integrated reflection on the research findings from both the UK and the US within broader theoretical and practical contexts, and proposes alternative approaches to mission development and monitoring mechanisms. Finally, Chapter 11 (Conclusion) summarises the principal contributions of the study, clarifies its academic significance, acknowledges its limitations, and suggests directions for future research.

Chapter 2. Literature Review 1: Conceptual Foundations of Strategic Foresight in Policymaking

2.1 Introduction

Strategic foresight has garnered increasing academic and institutional recognition as an indispensable facet of contemporary governance, equipping policymakers with the analytical tools necessary to anticipate, adapt to, and shape responses to complex and uncertain future developments (Slaughter, 1995; Kuosa, 2012). The escalating intricacy of global challenges—including anthropogenic climate change, disruptive technological innovation, shifting geopolitical dynamics, and transnational public health threats—has exposed the limitations of traditional policymaking paradigms that often prioritise immediate political imperatives at the expense of long-term sustainability. In contrast, foresight introduces a systematic and anticipatory mode of governance that enables the identification of emerging trends, the construction of plausible future scenarios, and the integration of long-range considerations into the policy formulation process (Habegger, 2010). Despite its rising prominence, the institutionalisation of foresight within national policy frameworks remains heterogeneous, shaped by a confluence of factors such as administrative capacity, political culture, and constitutional arrangements (Christensen et al., 2020).

This chapter seeks to elucidate the conceptual and theoretical dimensions of foresight, specifically addressing four key themes. First, Section 2.2 explores the nature of strategic foresight, offering a definition and examining its conceptual diversity and integration within governmental contexts. Second, Section 2.3 distinguishes foresight from prediction and forecasting by highlighting the limitations of traditional approaches and the growing relevance of foresight in an era of heightened uncertainty. Third, Section 2.4 traces the historical origins and increasing institutional popularity of the term 'foresight', from its early developments to its contemporary applications in strategic policy. Finally, Section 2.5 considers the role of foresight in government and policymaking, examining its core elements, theoretical underpinnings, and the significance of embedding foresight into strategic decision-making processes.

Within the three chapters that comprise the literature review, this chapter focuses on the conceptual and theoretical dimensions of foresight, while a review of the policy-oriented foresight practices in the UK and the US will be addressed in Chapters 3 and 4. Particular attention will be paid to contrasting the characteristics of the UK's centralised, minister-led model (Chapter 3) with the more decentralised, agency-led approach of the US federal government (Chapter 4).

2.2 What is Foresight? The Nature of Strategic Foresight

Foresight, or foreknowledge, transcends the traditional notions of forecasting and planning; it entails a structured and systematic understanding of long-term future developments and the formulation of strategic responses (Van der Heijden, 2005). Over time, foresight has evolved into a multidimensional construct, incorporating a wide range of disciplinary perspectives and methodological approaches. Its application has notably expanded across diverse domains, including public policy, corporate governance, technological innovation, military planning, and sustainability studies (Godin and Durance, 2011).

2.2.1 Conceptual Definition of Strategic Foresight

Strategic foresight is defined not simply as a mechanism for predicting future events, but as the analytical exploration of multiple scenarios and the design of strategic and policy responses to navigate uncertainty (Slaughter, 1995; 1999; 2003). This distinguishes it from traditional forecasting methodologies by focusing on the analysis of potential changes and systemic uncertainties to inform present-day decisions (Ringland, 1998).

Scholarly engagement with strategic foresight has contributed to a more nuanced conceptualisation of the field, portraying it as a proactive instrument capable of not only anticipating change but actively shaping desirable futures through strategic intervention.

Peter Bishop emphasises the pivotal role of leadership in the operationalisation of strategic foresight, suggesting that effective application necessitates visionary leadership and an organisational culture grounded in future-oriented thinking (Bishop, 2011). He highlights the

transition from basic foresight to strategic foresight, arguing that this shift mandates integration with strategic planning functions rather than reliance on forecasting in isolation.

Slaughter (1999) argues that foresight must be re-conceptualised as a core capability for individuals and institutions alike. He advocates moving beyond reactive problem-solving toward anticipatory reasoning, thus embedding foresight within long-term decision-making processes. Webb (2020) underscores the importance of data-driven foresight, positing that a robust strategic foresight process must integrate both quantitative and qualitative data to generate actionable insights and sustainable planning frameworks. Miles (2012) elaborates on the role of technology foresight in facilitating innovation, asserting that the early identification of emerging technologies and socio-political shifts is critical to shaping effective strategic responses. He particularly emphasises the relevance of foresight within government policy, where it is essential for anticipating systemic risks and designing adaptive public interventions. Kuosa (2012) advances the concept of systemic foresight, contending that futures analysis must transcend isolated variables to encompass complex, interconnected systems. He maintains that governmental bodies must apply systemic foresight to navigate multifaceted and volatile policy environments, thus enhancing long-term governance efficacy. Lustig (2015) advocates for the use of strategic foresight in addressing global, systemic challenges, asserting the value of inclusive stakeholder engagement. She promotes a participatory foresight approach to co-create a shared vision of the future, thereby enhancing legitimacy and policy relevance. Tully (2018) addresses the institutional challenges surrounding the implementation of strategic foresight within governmental contexts. She argues that the success of foresight initiatives hinges on the development of an internal foresight culture, capable of embracing complexity and transformation. Without such cultural shifts, she warns, foresight frameworks may fail to achieve meaningful influence. Glenn (2009) proposed a comprehensive foresight model that integrates diverse perspectives, having invented the Futures Wheel—a strategic planning and foresight tool—in the 1970s. This tool is now widely used worldwide to explore the direct and indirect consequences of trends, decisions, or events. Glenn has long championed collective intelligence on a global scale, positioning strategic foresight as a foresight intelligence framework that takes into account the cascading impacts of change.

Through the contributions of these scholars, strategic foresight has emerged as a distinct and vital framework, differentiated from conventional prediction by its emphasis on long-term change analysis and strategic adaptation. It functions as a key mechanism for navigating uncertainty across policy, technological, economic, and societal domains, offering organisations a means of preparing for—and shaping—future transformations. Moreover,

academic definitions of strategic foresight often encompass a broad array of concepts, including methodologies such as participatory foresight, scenario analysis, and prospective techniques.

However, it is essential to distinguish strategic foresight from the broader domain of futures studies. Strategic foresight should be understood as a specific, purposive approach focused on analysing uncertainty and supporting strategic and policy-oriented responses, rather than as a catch-all term for future-oriented inquiry (Van der Heijden, 2005). At its core, strategic foresight is not concerned with forecasting per se, but with systematically analysing uncertainties and applying these insights to inform high-level decision-making. While it may incorporate participatory foresight methods or scenario-based tools, such methodologies are not obligatory. Rather, strategic foresight functions as a structured analytical framework that enables organisations to anticipate change, reduce risk exposure, and identify emergent opportunities through sustained long-term thinking and policy alignment. The concept has matured into a multidimensional construct, integrating various academic traditions and methodological innovations, and its applications span policy, business, technological foresight, military doctrine, and sustainability governance (Godin and Durance, 2011).

2.2.2 Conceptual Diversity and the Integration of Foresight within Governmental Contexts

The concept of foresight extends beyond theoretical sophistication, having evolved into a composite and integrative framework actively applied in governmental strategic planning and policy development. In particular, participatory foresight, intelligence analysis, horizon scanning, technology assessment, and scenario planning function as mutually reinforcing components within the complex decision-making environments of the public sector. These tools are essential for enabling long-term strategic capacity and addressing deep uncertainty.

Participatory foresight entails the structured involvement of diverse societal actors—citizens, experts, and policy practitioners—in collaboratively constructing visions of the future. This approach enhances both the legitimacy and societal receptivity of policy discourse. In Finland, for example, the Government Report on the Future is published every parliamentary term under the auspices of the Prime Minister's Office. The process involves inter-ministerial collaboration and extensive engagement with non-governmental stakeholders. The resulting report—centred on strategic issues such as labour market transformation—contributes to

parliamentary deliberations and informs the development of medium- to long-term national strategies (Government of Finland, 2018; Habegger, 2010).

Intelligence, while traditionally rooted in the national security domain, has increasingly come to encompass the early identification of systemic risks and strategic opportunities. The National Intelligence Council (NIC) of the US exemplifies this broadened scope. In addition to providing classified briefings to the President and senior decision-makers, the NIC publishes the Global Trends (GT) reports, which analyse long-term geopolitical and structural shifts. These public-facing documents constitute a prominent example of foresight integration into governmental strategy formation (NIC, 2021; Heuer, 1999).

Horizon scanning refers to the systematic detection of weak signals and emerging issues across technological, political, and social domains. The Centre for Strategic Futures (CSF) in Singapore employs qualitative tools such as the Futures Wheel and STEEP analysis, alongside its digital RAHS (Risk Assessment and Horizon Scanning) system, which integrates machine learning to enhance anticipatory capabilities. This multidimensional approach enables policymakers to consider secondary and tertiary effects when formulating strategy (Ho, 2014).

Technology assessment (TA) involves evaluating the potential societal, economic, environmental, and ethical impacts of emerging technologies. It functions as a strategic advisory mechanism that guides regulatory, research, and investment decisions. The UK Parliamentary Office of Science and Technology (POST) exemplifies institutionalised TA, providing independent briefings on topics such as artificial intelligence, synthetic biology, and quantum computing. These assessments strengthen the democratic accountability of science and technology governance (POST, 2020).

Scenario planning involves the construction of multiple plausible future environments, allowing policymakers to stress-test decisions against alternative trajectories. The Netherlands Bureau for Economic Policy Analysis (CPB) and the Netherlands Environmental Assessment Agency (PBL) jointly develop long-term socio-economic and environmental scenarios. These are utilised in national policy discussions on energy transition, pension reform, and infrastructure investment. The comparative utility of these scenarios enables robust analysis of trade-offs across divergent global futures (CPB & PBL, 2019).

Taken together, these tools constitute a composite toolkit for strategic foresight within government. Each approach offers distinct strengths, ranging from inclusivity and expectation-

setting to regulatory alignment and systemic resilience. Yet no single method is sufficient on its own. In an era marked by climate instability, geopolitical realignments, and technological disruption, modern governments seek to integrate these approaches, attuned to institutional imperatives and contextual particularities, in order to navigate complex and uncertain futures effectively. Strategic foresight, grounded in these core components, represents not merely a methodology, but a governance philosophy: one that privileges anticipatory over reactive postures and collective preparedness over ad hoc crisis management.

2.3 Foresight is Not Prediction nor Forecasting

Foresight is frequently misconstrued as synonymous with prediction or forecasting; however, it is conceptually distinct (Godin and Durance, 2011). Prediction involves estimating the likelihood of specific outcomes based on historical data and prevailing trends (Miles et al., 2016), whereas forecasting applies quantitative techniques to project future values of selected variables at a specific point in time (Habegger, 2010). In contrast, foresight does not seek to pinpoint a single, definitive future. Rather, it emphasises the exploration of multiple potential futures—commonly referred to as alternative futures—and the development of strategic responses to them (van der Heijden, 2005). In an era characterised by profound uncertainty and complexity, foresight is gaining increasing relevance in both strategic thinking and policy development, where traditional forecasting and predictive methods often fall short (Slaughter, 1995; 1999).

2.3.1 Limitations of Prediction and Forecasting

Historically, prediction and forecasting have been integral tools within policy analysis and strategic business planning (Goodwin and Wright, 2010). Nevertheless, these methodologies exhibit several limitations when applied to today's rapidly evolving and uncertain contexts.

A. Limitations of Prediction

Prediction typically entails assessing the probability of discrete events based on existing and historical data (Taleb, 2007). This approach is fundamentally deterministic, presuming that the future can be inferred from current variables. However, such a stance proves inadequate in the

face of unexpected disruptions, such as so-called Black Swan events—rare, high-impact occurrences that are virtually impossible to anticipate using traditional models (Taleb, 2007). Furthermore, predictive models tend to be constrained to the short term, often focusing on horizons of one to five years (Slaughter, 1995), thereby rendering them unsuitable for long-term policy formulation or strategic foresight. Another critical weakness lies in the linear assumptions underpinning most predictive techniques. Statistical and machine learning-based prediction methods heavily rely on historical datasets, limiting their capacity to capture non-linear phenomena such as abrupt societal transformations or technological revolutions (Bishop et al., 2007). A pertinent illustration is the advent of artificial intelligence and automation, which challenge conventional labour market and economic models due to their disruptive nature and pace of evolution.

B. Limitations of Forecasting

Forecasting, unlike prediction, applies mathematical models to estimate the future value of specific variables, such as GDP growth or demographic changes (Armstrong, 2001). Although analytically rigorous, this approach is not without its flaws. Forecasting also tends to underestimate the uncertainty inherent in the future. Given its reliance on probabilistic modelling derived from historical trends, forecasting struggles in highly volatile environments (Miles et al., 2016). Events such as global pandemics, geopolitical instability, and climate disruptions often fall outside the scope of such models. Moreover, forecasting frequently lacks a systemic perspective. Models often isolate variables and ignore the complex interdependencies among technological, social, economic, and environmental systems (Habegger, 2010). For instance, a climate model that does not integrate innovation in green technologies or shifts in economic policy may yield misguided policy recommendations. Another limitation arises from variable selection bias. Forecasting models are only as robust as the variables chosen by the modeller; emerging dynamics—such as the rise of the digital economy or AI—can render existing models obsolete (Saritas and Smith, 2011). Traditional forecasting tools, for example, largely failed to predict the scale and nature of the platform economy, leading to significant misjudgements in economic and labour policy. In sum, while prediction and forecasting maintain utility under certain conditions, they exhibit significant limitations in environments characterised by uncertainty and rapid change. These shortcomings have driven the growing relevance of foresight, which seeks to address precisely such deficiencies.

2.3.2 The Growing Importance of Foresight

Foresight fundamentally diverges from prediction and forecasting by embracing an exploratory and systemic approach. It deliberately considers a plurality of future scenarios rather than aiming to determine a single outcome (Slaughter, 1995). This indeterministic orientation allows for greater flexibility and strategic agility (van der Heijden, 2005). A notable example is the European Commission's "White Paper on the Future of Europe," which presented five alternative scenarios to guide policymaking and institutional evolution (European Commission, 2017). Unlike forecasting, foresight prioritises structural trends and long-term trajectories over short-term fluctuations (Habegger, 2010). Singapore's scenario planning methodology exemplifies this approach by envisioning national strategies with a 20–30-year time horizon, thereby enabling resilience against unforeseen disruptions (OECD, 2019). Additionally, foresight integrates systemic thinking by analysing the interrelations among political, technological, economic, and environmental factors (Saritas and Smith, 2011). This holistic lens is especially valuable in complex policy areas such as climate change, where cross-sectoral dynamics must be considered (IPCC, 2018). Importantly, foresight is not solely an analytical instrument; it serves a normative and strategic function. By fostering anticipatory governance and strategic preparedness, foresight enhances institutional adaptability and long-term decision-making capacity (Fuerth and Faber, 2012). In the domains of public policy and corporate strategy alike, its value lies in enabling organisations to navigate uncertain futures with purpose and resilience (Godin and Durance, 2011).

In conclusion, while prediction and forecasting have traditionally been employed to analyse future developments, their limitations—particularly in dealing with uncertainty, non-linearity, and systemic complexity—are increasingly apparent. Prediction remains largely deterministic and short-term in focus, whereas forecasting relies on narrowly defined variables and linear models that are ill-suited to rapid change. Foresight, by contrast, offers a forward-looking, adaptive, and systemic framework that is increasingly indispensable in policymaking and strategic planning. As global uncertainty intensifies, the need for foresight-based approaches will only become more acute.

2.4 Origins of the term ‘Foresight’ and A rise in popularity

Foresight has increasingly been acknowledged as a pivotal concept in the realms of policy-making, strategic planning, and technological innovation. It enables decision-makers to confront uncertainty, adopt a long-range perspective, and craft resilient strategies. This chapter explores the etymological and conceptual origins of ‘foresight’ and traces its ascendance in academic and policy-oriented discourse from the late twentieth century to the present.

2.4.1 The Historical Foundations of Foresight

The concept of foresight is rooted in a diverse array of intellectual traditions, spanning philosophy, economics, military strategy, and public policy. Its philosophical origins can be traced to classical thinkers such as Plato and Aristotle. In *The Republic*, Plato emphasised the necessity of strategic insight and prudent counsel in envisioning and governing an ideal state. Aristotle, in *Nicomachean Ethics*, introduced the concept of *phronesis*—practical wisdom—highlighting prudence and long-term thinking as central to ethical and political life (Aristotle, trans. 2019).

Comparable notions emerged in ancient Eastern philosophy. Mencius (孟子), a foundational Confucian thinker, asserted that virtuous leadership requires moral discernment and long-range planning. His maxim, “a noble person governs by looking far ahead” (君子之治，必先远图), reflects a vision of ethically grounded, foresightful governance (Chen and Lee, 2018), which deeply influenced East Asian traditions of statecraft.

In early modern Europe, Francis Bacon advanced the role of empirical reasoning in the progress of society. In *Novum Organum* (1620), he argued that rational, evidence-based anticipation of the future was essential to informed governance and innovation (Bacon, 1620).

The 19th century saw the emergence of social scientific frameworks aimed at understanding long-term societal development. Auguste Comte and John Stuart Mill sought to identify patterns in social change and to conceptualise the dynamics of progress through rational analysis (Comte, 1844; Mill, 1848).

By the early 20th century, foresight had gained importance in economic and strategic thought. John Maynard Keynes stressed the need to anticipate economic instability and advocated proactive state intervention to reduce uncertainty and systemic risk (Keynes, 1936). Likewise, Karl Polanyi argued that unregulated markets, without strategic guidance, generate social dislocation and crisis unless moderated by foresightful policy (Polanyi, 1944).

Meanwhile, literary futurist H.G. Wells issued one of the earliest explicit calls for organised futures thinking in *The Shape of Things to Come* (Wells, 1933). He proposed that the systematic study of the future could aid in preventing conflict and guiding societal advancement. These ideas gained further traction after the Second World War (WWII), as governments increasingly turned to foresight to navigate complexity and global risk.

2.4.2 Post-World War II: Institutionalisation of National Foresight Research

The devastation of the WWII catalysed the institutionalisation of foresight research, as governments and military leaders recognised the critical role of strategic forecasting and long-term planning in maintaining peace, stability, and preparedness (Habegger, 2010; OECD, 2019). The onset of the Cold War and the emergence of nuclear weaponry further reinforced the urgency of anticipatory governance, prompting the creation of foresight-oriented institutions in both the US and Europe (Godin and Durance, 2011).

Among the most influential was the RAND Corporation, established in 1948, which pioneered the application of scenario planning and the Delphi method in national security contexts. RAND enabled policymakers to explore alternative futures and devise resilient strategies (Kahn and Wiener, 1967). Herman Kahn, a leading RAND theorist, advocated for “thinking the unthinkable” in his seminal work *On Thermonuclear War* (1960), which introduced strategic imagination as a necessary response to catastrophic risk (Kahn and Wiener, 1967; Scholter, 1997). His influence later extended to economic and technological policy through the Hudson Institute.

In the Soviet Union, foresight was integrated into the centralised planning system. The State Planning Committee (Gosplan) employed long-range forecasting to direct economic and technological development, particularly in the military and space sectors—key fronts in the Cold War (Gustafson, 1981).

In Western Europe, foresight was similarly embedded in reconstruction and modernisation efforts. France's Commissariat Général du Plan, founded in 1946, coordinated long-term economic strategies, while the UK expanded its foresight efforts during the 1960s, eventually formalising them in the 1994 Foresight Programme focused on science and innovation policy (Martin and Irvine, 1989).

At the EU level, institutions such as the European Foresight Platform and Forward Thinking Platform were established to enhance transnational cooperation and institutionalise long-term thinking within policymaking processes (Saritas and Smith, 2011).

In summary, since the mid-20th century, foresight has become institutionalised across military, economic, and policy domains. Its systematic use has enabled governments to manage complexity and develop robust policies for an uncertain future. Today, foresight remains integral to strategic governance and public sector innovation.

2.4.3 Herman Kahn and Strategic Foresight in the Cold War Era

Herman Kahn, a physicist and strategic theorist, laid the theoretical foundation for strategic foresight during the Cold War. He significantly influenced the evolution of U.S. nuclear strategy and future-oriented policy design. Rather than viewing nuclear war as an apocalyptic inevitability, Kahn argued that it could be anticipated, managed, and, under certain conditions, strategically controlled (Kahn, 1960). His approach expanded the scope of deterrence theory by focusing not only on prevention but also on operational and post-conflict recovery planning.

The Eisenhower administration had formalised the doctrine of massive retaliation through National Security Council (NSC) 162/2, asserting that any Soviet aggression would trigger an overwhelming nuclear response (Gaddis, 1982). However, this approach was limited by its lack of flexibility and the risk of mutual destruction in the event of escalation. Kahn criticised this rigidity and urged the U.S. to develop scenario-based strategies to ensure post-conflict recovery across social, military, and economic dimensions (Kahn, 1960).

Kahn's theoretical contributions, particularly in *On Thermonuclear War* (1960), laid the conceptual foundations for the Kennedy administration's Flexible Response strategy. By introducing principles such as strategic gradation, operational resilience, and recoverability, he

dismantled the binary logic of nuclear deterrence. Subsequent analyses further contextualise his influence within the broader evolution of nuclear strategy and military planning (Freedman, 1989; 2013). His famous call to “think about the unthinkable” underscored the necessity of incorporating worst-case scenarios into strategic deliberation, not as a call for conflict but as a safeguard against it (Kahn and Wiener, 1967; Slaughter, 1995).

Kahn’s legacy extends beyond Cold War strategic theory to significantly influence modern Futures Studies and scenario planning. Leading futurists such as Alvin Toffler, Peter Schwartz, and Pierre Wack drew heavily from his ideas. Toffler’s “Future Shock” (1970) explored the psychological impacts of rapid technological and social change, echoing Kahn’s concerns. Schwartz operationalised Kahn’s scenario frameworks in the corporate sphere, particularly during his tenure at Royal Dutch Shell, and championed scenario thinking in “The Art of the Long View” (Schwartz, 1996; Wack, 1985). Kahn’s influence also permeated U.S. defence strategy. Andrew Marshall, head of the Pentagon’s ONA, applied Kahn’s methodologies to long-range strategic planning, encompassing cyber warfare, military innovation, and technological superiority (Thompson, 2010; Habegger, 2010). His systems thinking and scenario modelling were later incorporated into the National Security Strategy (NSS), and strategic assessments conducted by the DOD and the CIA (Thompson, 2010; Kuosa, 2012).

Globally, Kahn’s impact has been institutionalised. The UK government launched its Foresight Programme in 1994, embedding scenario planning principles aligned with Kahn’s methods (Martin and Irvine, 1989). Similarly, France’s Commissariat Général du Plan incorporated his techniques into long-term industrial and economic planning (Godin and Durance, 2011). In Asia, Singapore’s CSF and Japan’s NISTEP adopted Kahn’s models for national development planning and technology roadmapping (Habegger, 2010; Kuosa, 2012).

In conclusion, Herman Kahn established a rigorous methodological and conceptual architecture for strategic foresight, encompassing scenario planning, systems modelling, and contingency-based strategies.

2.4.4 Post-1960s: The Expansion of Foresight in Economic and Corporate Strategy Development

From the 1960s onward, foresight gradually moved beyond its origins in governmental and military planning to become an integral element of economic policy and corporate strategic

management. This era marked a shift from reactive security mechanisms to a proactive strategic discipline, enabling organisations to pursue long-term sustainability and maintain competitive advantage in increasingly volatile environments (Miles et al., 2016).

One of the most influential proponents of corporate foresight was Peter Drucker, who stressed the importance of long-range planning and innovation in effective management. In his early work, Drucker (1969) introduced a forward-looking model in which organisations were not only to anticipate trends but actively shape their operating environments. His oft-cited maxim—“the best way to predict the future is to create it” (Drucker, 1993)—encapsulates a foresight-driven ethos that has since permeated corporate strategic thinking.

This paradigm gained particular traction among multinational corporations (MNCs), which adopted foresight tools to navigate global market uncertainty. A landmark case was Royal Dutch Shell’s deployment of scenario planning during the 1970s. Developed under Pierre Wack, Shell’s approach enabled it to anticipate and respond effectively to the 1973 oil crisis. This success showcased the practical value of foresight and catalysed broader corporate interest in scenario-based planning (Wack, 1985; Schwartz, 1996; van der Heijden, 2005).

In the years following Shell’s breakthrough, companies such as GE, IBM, and Motorola began embedding structured foresight practices into their strategic processes. By integrating technology foresight with market intelligence, these firms developed adaptive innovation frameworks that enhanced long-term resilience and responsiveness to regulatory and consumer dynamics (Rohrbeck et al., 2015).

Simultaneously, academic work in management and economics contributed theoretical rigour to the foresight field. Igor Ansoff (1975) advanced strategic issue management by emphasising the early detection of environmental discontinuities and structured organisational responses. Jay Forrester (1961), through the introduction of system dynamics, provided a modelling framework for understanding feedback-driven structural change in complex systems.

Together, these developments contributed to the institutionalisation of foresight within corporate strategy—both as a conceptual framework and a practical toolkit. Scenario thinking, technological forecasting, and systems modelling became essential instruments for firms seeking to navigate long-term uncertainty with strategic agility and foresight competence.

2.4.5 21st Century: Global Uncertainty and the Evolution of National Foresight Trends

The 21st century has been marked by escalating global uncertainty, driven by geopolitical instability, technological disruption, and complex transnational challenges such as climate change, demographic shifts, and digital transformation. In this context, foresight has transitioned from a marginal technocratic tool to an institutionalised element of national governance and strategic policymaking. Once limited to expert circles or corporate planning, foresight is now increasingly mainstreamed and democratised across both advanced and emerging economies (OECD, 2019).

A defining trend in this evolution is the move towards participatory, multi-stakeholder approaches. Foresight now serves not only as a tool for anticipatory analysis but also as a deliberative space for co-developing strategic visions that reflect diverse values and long-term societal aims (Johnston et al., 2008). Integrated methods—such as scenario planning, horizon scanning, Delphi techniques, and backcasting—are embedded within national strategies to address systemic risks and guide cross-sectoral transformation in areas like energy, security, health, and education (European Commission, 2021).

Institutional innovations highlight this shift. Finland integrates foresight into parliamentary cycles to align legislative agendas with long-term priorities (Prime Minister’s Office, 2020). The European Commission’s Strategic Foresight Agenda embeds futures thinking into policy design and cross-sectoral resilience planning (European Commission, 2021). Singapore’s Centre for Strategic Futures exemplifies adaptive governance through continuous scanning and inter-agency coordination (Ho, 2014).

Contemporary foresight is increasingly anticipatory, enabling governments to build governance capacities grounded in agility, experimentation, and institutional learning (Miller, 2018). Many foresight units engage in “prepolicy” activities—shaping agendas before formal commitments—to foster strategic coherence. This signals a broader shift: foresight is no longer just technical support, but a cornerstone of public sector innovation.

Organisations like the OECD and UNESCO have bolstered this movement by promoting foresight literacy, capacity-building, and global methodological exchange (OECD, 2019; Miller, 2018). These efforts have strengthened institutional ability to coordinate and respond to complex, long-term issues.

In sum, foresight has evolved into a normative governance practice—central to shaping resilient, inclusive, and future-oriented policy. It is not merely about predicting the future, but about enabling societies to imagine, design, and realise preferable futures. Strengthening foresight capabilities is thus imperative for governments navigating today’s rapidly shifting global landscape.

2.5 The Role of Foresight in Government and Policymaking

Strategic foresight transcends conventional forecasting by engaging in the systematic exploration of uncertain future environments and the development of comprehensive long-term strategies. In the context of contemporary society—characterised by rapid technological advancements, accelerating climate change, and evolving geopolitical dynamics—governments and public policy institutions are increasingly compelled to move beyond traditional, short-term forecasting paradigms and instead adopt more structured and forward-looking planning methodologies (Wright, Cairns and Bradfield, 2013).

2.5.1 Core Elements of Strategic Policy Foresight

Contrary to simplistic predictions, strategic foresight involves the rigorous analysis of long-term transformation patterns, the construction of alternative scenarios, and preparation for deep uncertainty. Its effective application in policy and governance rests on several core principles.

First, a long-term perspective is essential. Rather than focusing on short-term fluctuations, foresight identifies macro-level trends that unfold over extended periods (Slaughter, 1999). This orientation helps policymakers evaluate the lasting consequences of present decisions, fostering sustainable policy strategies informed by technological, social, and ecological developments (Rialland and Wold, 2009). Second, foresight requires a non-deterministic approach. The future is not a single, inevitable outcome but a set of plausible alternatives shaped by complex, non-linear interactions (Bishop, Hines and Collins, 2007; Inayatullah, 2015). Scenario planning enhances resilience by equipping institutions to think strategically in the face of uncertainty (Ramos, 2006). Third, systemic thinking is crucial. Developments must be understood as emergent properties of interconnected systems—economic, technological,

and socio-political—rather than as isolated variables (Meadows, 2008; Habegger, 2010). This perspective uncovers feedback loops and interdependencies critical to complex policy environments (Millard, 2018). Fourth, foresight must enable adaptive capacity. It moves beyond trend identification to inform strategic responses and institutional adaptation (Glenn, 2009; Saritas and Nugroho, 2012). Operational foresight requires translating insights into governance frameworks. Fifth, foresight must be integrated into strategic decision-making. It should not remain a detached exercise but be embedded in institutional planning to ensure long-term considerations inform daily governance (Poli, 2017; Mendonça et al., 2004). Sixth, foresight embraces uncertainty and complexity. Instead of deterministic models, it treats uncertainty as a space for opportunity, particularly in volatile global systems marked by technological disruption, ecological instability, and geopolitical shifts (Kuosa, 2012; Stevenson, 2012). Finally, foresight is iterative and demands flexibility. As conditions evolve, strategies must adapt. Institutions require feedback mechanisms to integrate emerging intelligence and revise plans accordingly (Van der Heijden, 2005; Hines and Bishop, 2013).

Strategic foresight thus transcends traditional forecasting through scenario construction, systems thinking, and strategic responsiveness. It supports long-term planning by identifying major trends and preparing for diverse futures (Slaughter, 1999; Rialland and Wold, 2009).

The US NIC's Global Trends reports illustrate how foresight informs national strategy through analysis of geopolitical, technological, and demographic shifts (NIC, 2016; Ringland, 2006). The US Coast Guard's Evergreen project exemplifies institutionalised foresight in managing maritime risks and climate change (USCG, 2009b; 2015b; 2019; Inayatullah, 2015). Post-9/11, the creation of the ODNI under the Intelligence Reform and Terrorism Prevention Act (2004) reflects the formal embedding of foresight into U.S. intelligence policy (OECD, 2019; George, 2016). In economic policy, scenario thinking shaped corporate resilience (Wack, 1985), while the Obama administration's Clean Power Plan integrated foresight into climate and energy policy (EPA, 2016). Ultimately, strategic foresight aims to address the volatility, uncertainty, complexity, and ambiguity (VUCA) of the modern world.

2.5.2 Theoretical Approaches to Strategic Foresight

Strategic foresight denotes a systematic and anticipatory approach that enables policymakers to navigate present uncertainties and design coherent long-term strategies (Godet, 2001). Rather than relying on deterministic forecasts, such foresight explores multiple plausible

futures, enhancing policy resilience and adaptability amid volatility (Slaughter, 1995; 1999). To integrate such an approach as a cognitive and organisational framework essential for decision-making under uncertainty, methods such as scenario planning, strategic foresight, and foresight governance are typically employed.

A. Scenario Planning

Scenario planning is a core foresight method that investigates a spectrum of future conditions to guide decision-making (Van der Heijden, 2005). It allows policymakers to develop flexible responses based on a range of potential developments (Van Notten et al., 2003). Schoemaker (1995) asserts that scenario planning enhances strategic capacity by fostering adaptive thinking, while Schwartz (1996) underscores its utility in challenging assumptions and improving institutional adaptability. In contexts shaped by rapid innovation, geopolitical instability, and climate change, scenario planning offers a structured approach to anticipate and address emergent complexities.

B. Strategic Forecasting

Strategic forecasting involves the use of long-term political, economic, and social information to support proactive policy design (Miles et al., 2016). It transcends trend extrapolation by assessing risks and seizing early opportunities (OECD, 2019). Popper (2008) views it as a holistic strategy for managing policy shifts, while Makridakis et al. (2010) highlight its relevance in fast-changing environments. Applications include climate mitigation, AI regulation, and demographic planning, underscoring its value in sustaining coherent and future-proof policy directions.

C. Anticipatory Governance

Anticipatory governance proactively incorporates foresight into governance to address risks before they manifest (Fuerth and Faber, 2012). Unlike reactive models, it prioritises continuity and adaptability. Fuerth (2009) and Habegger (2010) argue for its role in transcending crisis-driven policymaking, and Boston (2016) stresses its function in resisting short-termism. In the face of climate change, pandemics, and digital disruption, anticipatory governance enhances policy legitimacy and effectiveness by enabling long-term vision.

2.5.3 The Significance of Integrating Strategic Foresight into Policy Decision-Making

Strategic foresight provides a structured methodology to formulate durable and adaptable national strategies (Godet, 2001). It equips governments with tools to respond to complex forces—technological disruption, environmental risks, geopolitical tensions—by exploring plausible scenarios and crafting agile responses (Slaughter, 1995; 1999; OECD, 2019).

A. Mitigating Uncertainty and Enhancing Long-Term Preparedness

Strategic foresight anticipates transformations in economic, environmental, and technological domains, enabling resilience against uncertainty (Habegger, 2010). EU climate policies and Singapore’s Centre for Strategic Futures exemplify how scenario planning strengthens strategic planning (European Commission, 2021; Centre for Strategic Futures, 2020). Institutionalising foresight ensures that national development is grounded in long-term sustainability.

B. Ensuring Continuity of Public Policy

Frequent political transitions often threaten long-term policy goals. Foresight frameworks can mitigate this by embedding adaptability and vision across election cycles (OECD, 2019). For example, Finland’s National Foresight Network maintains strategic direction in sectors like energy and education, insulating policy from political volatility and ensuring coherence (Prime Minister’s Office Finland, 2022).

C. Reinforcing Crisis Preparedness

Strategic foresight enhances crisis readiness across economic, health, and environmental sectors (Taleb, 2007). Countries like Taiwan and New Zealand responded swiftly to COVID-19 due to prior scenario exercises (OECD, 2020). Similarly, early climate action in Europe has mitigated vulnerabilities and positioned these nations as leaders in green innovation (IEA, 2021).

D. Fostering Innovation through Technological and Societal Transformation

Foresight enables alignment between governance and emerging technologies such as AI and automation (Bishop, Hines and Collins, 2007). As Makridakis, Hogarth and Gaba (2010) suggest, data-driven foresight will shape future public administration. Estonia and South Korea

exemplify this through advanced digital governance initiatives, showing how foresight supports policy relevance and competitiveness (UN DESA, 2020; Ministry of Science and ICT, 2021).

In summary, strategic foresight theoretically serves to mitigate uncertainty, sustain long-term planning, ensure policy continuity, and strengthen crisis responsiveness. Moreover, its integration promotes innovative governance aligned with technological evolution. However, meaningful implementation requires the institutionalisation of foresight units within government, the enhancement of participatory and performance-evaluation mechanisms, and investment in data-driven capabilities. In the absence of such efforts, policy frameworks risk becoming ineffectual. As is often emphasised, the future belongs not to those who merely predict it, but to those who prepare for it.

2.6 Conclusion

Strategic foresight marks a shift from traditional linear forecasting towards a more integrated, adaptive, and anticipatory approach to policymaking amid growing complexity and uncertainty. As outlined in this chapter, foresight is not merely predictive but constitutes an iterative, participatory process that helps policymakers explore plausible futures, identify emerging trends, and build resilient strategies.

The US has historically led in institutionalising foresight, with Herman Kahn’s Cold War-era scenario work—particularly through the RAND Corporation and the Hudson Institute—pioneering strategic thinking (Kahn and Wiener, 1967). Today, the US continues this tradition through the NIC’s Global Trends reports (NIC, 2016).

Countries such as Finland, Singapore, and the EU have successfully embedded foresight in their governance systems. Initiatives like Finland’s National Foresight Network, Singapore’s Centre for Strategic Futures, and the EU’s “Fit for 55” climate strategy highlight its value in promoting long-term planning and resilience (Prime Minister’s Office Finland, 2022; Centre for Strategic Futures, 2020; European Commission, 2021).

The UK, while having a notable foresight legacy via GO-Science’s Foresight Programme, could benefit from deeper integration across departments. Strengthening horizon scanning,

scenario planning, and public engagement would better equip it to address challenges such as the net-zero transition, digital transformation, and inclusive growth (OECD, 2019).

Ultimately, foresight is not simply a methodological tool but a critical capability for future-oriented governance—enabling a shift from reactive policymaking to proactive, strategic action rooted in agility, transparency, and intergenerational responsibility. As the saying goes, “The future does not belong to those who merely predict it, but to those who prepare for it” (Malcolm X, 1962).

Chapter 3. Literature Review 2: Tradition and Reform of British Policymaking for Strategic Foresight

3.1 Introduction

The UK government, like many others, continues to confront persistent challenges—including the climate crisis, social inequality, and digital disruption—while striving for more innovative and future-oriented policy solutions. Yet, over the past 25 years, reformist rhetoric centred on sustainability, systems thinking, public engagement, technology-driven governance, evidence-based policymaking, and ethical accountability has largely failed to deliver substantive institutional change, exposing underlying systemic dysfunction (Cairney et al., 2024a). A key source of this inertia lies in the enduring Westminster model and the bureaucratic culture it reinforces. Defined by concentrated executive authority, the fusion of legislative and executive powers, and ministerial responsibility, the system promotes hierarchical, elite-driven governance (Rhodes, 2011). Accountability is narrowly framed through electoral and parliamentary channels, often privileging short-term political priorities over long-term strategy.

Consequently, its national foresight initiatives face structural and cultural resistance that undermine continuity, experimentation, and strategic vision. Despite rhetorical support for adaptive and anticipatory policymaking, institutional responsiveness remains constrained by the Westminster system—a limitation widely acknowledged in governance scholarship (Marsh et al., 2003; Diamond, 2013). Centralised authority, fragmented reforms, and rigid approval processes impede policy agility and coherence. These limitations became particularly evident during Brexit and the COVID-19 crisis, when strategic capacity was visibly strained (Diamond, 2023; Gaskell, Stoker and Jennings, 2020).

While some scholars suggest governance is evolving towards greater decentralisation under the influence of globalisation and digitalisation (Bevir and Rhodes, 2003; Newman, 2001), others argue that core institutions—especially the civil service—retain dominant influence, rendering many reforms largely procedural or symbolic (Diamond, 2013; Richards and Smith, 2016).

This chapter critically examines the persistent tension between institutional traditions and policy innovation within UK governance. First, it analyses how the structural characteristics of the Westminster model have historically constrained policy innovation, particularly under conditions of uncertainty and crisis (Section 3.2). Second, it considers the history of the UK's National Foresight Programme (Section 3.3) and the ROAMEF framework (Section 3.4), a policy design and evaluation tool employed by the UK government. This sequence reflects the fact that the UK National Foresight Programme presents an adaptive Futures Model built upon the ROAMEF framework. Finally, the chapter investigates how the institutional logic of the Westminster model, combined with the complexities inherent in governance systems, has hindered the systematic integration of long-term strategic foresight into policy development through the current policy cycle model (Section 3.5).

3.2 The Westminster Model's Barrier to Innovation

The UK government has repeatedly expressed its commitment to improving policymaking, with efforts centred on strengthening the strategic capacity of central government, adopting place-based systems thinking, and embracing preventative and participatory approaches (HM Government, 2017; Design Council, 2018a; 2018b; GO-Science, 2022). It has also outlined ambitions to enhance accountability and effectiveness in decision-making through evidence-based policymaking (House of Commons, 2006) and the application of behavioural insights (Behavioural Insights Team, 2011; 2012; 2018; Davies, 2004; Dolan et al., 2010; HM Treasury, 2020).

Despite these reformist ambitions, scholars have argued that such aspirations remain largely rhetorical, lacking in sustained institutional implementation. As Cairney (2016: 113) observes, "many aspirations for more evidence-informed policymaking remain rhetorical because they are not accompanied by sustained institutional reform or policy learning mechanisms." Empirical studies also suggest that meaningful progress has been limited. This is in large part due to the structural characteristics of the UK's Westminster system, which incentivises short-term political decision-making and prioritises electoral cycles over long-term strategic innovation (Cairney, 2016; Parsons, 2002).

Frequent leadership changes among Prime Ministers and Cabinet ministers, historically low levels of public trust, persistent inflationary pressures, and mounting crises across key public

services have significantly complicated the UK government's attempts at institutional reform. A prominent example is the National Health Service (NHS), which is often cited as symptomatic of the systemic limitations inherent within the Westminster model of governance. Chronic underfunding, inefficiencies, and rigid administrative structures have raised critical questions regarding the capacity of this model to deliver responsive and effective public services (Appleby et al., 2022). In periods marked by political volatility and institutional strain, the centralised and hierarchical configuration of the Westminster system has tended to exacerbate policy failures rather than resolve them.

The entrenched dynamics between political elites and senior civil servants—characterised by insularity and an absence of wider stakeholder engagement—have been criticised for producing a policy environment disconnected from the lived realities of the citizenry (Bevir and Rhodes, 2003; Richards and Smith, 2016). The democratic deficit inherent in this model has impaired the government's capacity to cultivate long-term, adaptive, and innovative policy solutions suited to contemporary governance challenges (Cairney et al., 2024a).

In light of these structural deficiencies, scholars have increasingly called for a reconfiguration of governance frameworks towards more decentralised, participatory approaches. Localised governance, grounded in principles of co-production and civic engagement, is posited as a means of enhancing both the effectiveness and legitimacy of policy processes. Such models not only promise to tailor solutions to the specific needs of communities but also to strengthen democratic accountability and transparency in implementation (Sullivan and Skelcher, 2002; Bevir and Rhodes, 2003; OECD, 2023). A shift towards participatory governance may thus serve as a corrective to the pathologies of over-centralisation, supporting the development of more sustainable and context-sensitive public policy.

3.3 History of the UK National Foresight Programme

The UK's National Foresight Programme (hereafter, FP) traces its institutional origins to the Technology Foresight Programme (TFP), which was launched in 1993 under the joint auspices of the Office of Science and Technology (OST) and the Department of Education and Science (DES). The first cycle (1993–1999) of the FP primarily sought to establish national priorities

in science and technology, focusing on the development of a strategic response framework aimed at the scientific community and research funding bodies.

This initial phase heavily relied on Delphi surveys and expert workshops, employing a predominantly analytical methodology anchored in sector-specific expert panels. These panels produced outputs such as reports, prioritised technology lists, and policy recommendations, largely aligned with economic imperatives, including technological innovation and industrial competitiveness. However, the approach during this period was notably technocratic in character, lacking sufficient attention to social implications or interdisciplinary integration. In this respect, the early phase stands in marked contrast to subsequent generations of foresight practice. It may be characterised as a contractual mechanism between bureaucratic and scientific actors for determining technological priorities, functioning more as a policy signalling tool than a response to industrial strategic needs (Miles, 2002). Indeed, this stage has been evaluated as a continuation of traditional forecasting tools rather than a fully institutionalised policy apparatus.

	Cycle 1	Cycle 2	Cycle 3
Time frame	Year 1993 - Year 1999	Year 1999 - Year 2002	Year 2002 (April) - Present
Lead Government	Department of Education and Science (DES), Office of Science and Technology (OST)	Department of Trade and Industry (DTI), Office of Science and Technology (OST)	Department for Science, Innovation and Technology (DSIT), Government Office for Science (GOS)
	* The change of Lead Government and Department is mainly effected by A machinery of government (MoG) change. * The GOS was established in 2007 - The intermediate stage of the change in the relevant department is omitted.		
Main Rationales	S&T priorities	Business and societal dialogue	Anticipating policy-relevant change and risk
Main Targets	Initially, scietist and research funding agencies; Laterly also the business community	Several actors across goverenemt, business, the research world, and society	It might focused on government ministries (Miles, 2008) at the beginning, but it currently promotes foresight to both public and private sectors including civil societies, academia
Coverage	Mix of sectoral and technological areas spanning most of private sector and some public sector	Mix of sectoral and thematic areas - even wider coverage than the first cycle	Focused topic areas of interest to government ministries
Structure	Standing sectoral panels	Secotral and thematic panels with task forces	Rolling projects
Participants	According to Miles (2008), the three cycles has the similar formats, and more industry actors are involved in the third cycle. Later in Cycle 3, beyond the government, business and academia, there is the attempts to expand participants to publics including young generations.		
Methods	Delphi survey and workshop	Predominatnly scenarios and consultation documents, website for dissemination and interaction	Wider methods including scenatios, simulations and gaming, Delphi, workshops in different projects
Outputs	Panel reports, Delphi results, priorities and recommendations, and various other reports during the implementation phases	Panel & Task force reports, web-based publications	Project reports inclcding the state of science reviews, scenarios, workshop results, academic papers etc

[Table 1] A Schematic Illustration of the Evolution of UK Foresight, by Author

During the second cycle (1999–2002), the FP underwent a strategic transition, moving away from a narrow focus on technological prediction towards fostering broader societal and business dialogue. This represented a fundamental shift in the policy paradigm—from the identification of S&T priorities to a more holistic consideration of the societal consequences of science and technology.

The transfer of supervision of the program to the Department of Trade and Industry (DTI) marked a significant institutional shift, signalling the broader government's intention to integrate forward-looking into its industrial and economic policy framework. In parallel, the range of stakeholders involved in the foresight process expanded to include not only industrial, academic, and public-sector actors but also civil society organisations and third-sector experts.

Structurally, the FP abandoned the fixed sectoral panel model in favour of a task force-based approach oriented around specific societal challenges. This enabled more integrated analysis across policy domains on issues such as ageing, the future of manufacturing, and crime prevention, fostering interdepartmental collaboration and synergy. Methodologically, tools such as scenario planning, web-based consultation platforms, and electronic feedback systems were introduced, laying the institutional foundation for public engagement in foresight.

Saritas (2013) assessed this evolution as a shift from technology-centred foresight to policy-integrated foresight, characterising the second cycle as an institutional experiment in embedding foresight within its societal context. Miles (2005) similarly highlighted the importance of this phase in establishing the FP's strategic character by enhancing multi-actor engagement and fostering stronger linkages between policy domains.

As such, the second cycle served as a transitional phase in which the FP sought to evolve from a demand-driven technological forecasting mechanism into a more integrated policy coordination tool—one capable of responding to the complexities of modern society, the plurality of values, and the interdependence of policy arenas.

The third phase of the FP (2002–present) represents a period of significant institutional transformation, marking a transition towards evidence-based policymaking and governance oriented around foreseeable risks. Following the appointment of Sir David King as Government Chief Scientific Adviser (GCSA) in 2002, the Foresight Programme underwent structural reforms aimed at embedding foresight as a central function within national decision-making institutions.

These institutional changes were catalysed in part by the outbreak of foot-and-mouth disease in 2001, which had profound implications for agriculture, supply chains, public health, and local economies, revealing structural vulnerabilities in the government's policy planning mechanisms during multidimensional crises (Saritas, 2013; Saritas and Anim, 2017; Interview, 2024). The crisis prompted fundamental questions regarding the adequacy of Foresight's short-term, technocentric models, and generated widespread recognition of the need for long-term,

scientifically grounded strategies to support crisis management. Consequently, the programme was reoriented within GO-Science to transcend purely technological foresight, embracing integrated and strategic policy mechanisms capable of addressing cross-cutting and long-term societal challenges (GO-Science, 2020).

This institutional change unfolded along four main trajectories:

First, the FP transitioned from a static expert panel structure to a rolling project model, enabling agile policy experimentation across a range of emerging societal issues. This shift allowed foresight to function not as an ex-post evaluative tool but as the starting point for policy design.

Second, the programme significantly expanded its participatory base. In addition to conventional stakeholders—government, industry, and academia—civil society organisations, local communities, and younger generations were actively engaged, transforming the FP into a platform for public-oriented foresight governance. This change institutionalised participatory foresight practices and enhanced both the legitimacy and implementability of foresight outcomes.

Third, the FP's methodological toolkit broadened considerably. Beyond Delphi surveys and scenario planning, techniques such as simulation modelling, policy gaming, interactive workshops, and citizen-led facilitation were employed, tailored to specific project goals. These innovations enabled the development of multi-dimensional policy responses to complex, intersecting challenges—including climate change, health crises, and digital inequality.

Fourth, the programme's outputs diversified. In addition to technical reports and expert analyses, the FP began producing policy recommendations, scenario white papers, public consultation reports, and synthesis documents from stakeholder workshops. These outputs supported enhanced engagement with policymakers, citizens, the media, and the academic community—thus contributing to greater transparency, accountability, and scholarly legitimacy. This third cycle has been described as the institutionalisation of foresight as anticipatory governance, marking a shift from foresight as a technical instrument to a platform for policy design and collective imagination (Saritas, 2013; Saritas and Anim, 2017; Miles, 2010).

In this regard, the FP has evolved from an internal forecasting tool into a science-based public policy platform, laying the groundwork for foresight applications across diverse policy domains, including urban development, public health, national security, and education. It has

also significantly contributed to the long-term sustainability and strategic flexibility of the UK's foresight infrastructure.

The operation of the FP under this framework is guided by three core strategic visions:

First, the FP seeks to move beyond reactive policy planning by establishing a long-term, systems-oriented strategic framework. This enables a more structural response to societal complexity and future uncertainty. Collaborative scenario development and the identification of long-range challenges are conducted in partnership with various departments and expert communities, facilitating the provision of science-based insights across government policy areas (GO-Science, 2020; Interview 2, 2024). This approach marks a shift from policy-fixing to futures-shaping, recasting foresight as a framework for systemic policy design.

Second, the FP aims to strengthen anticipatory strategies for long-term systemic risks, such as climate change, pandemics, and demographic shifts. By adopting multi-sectoral analyses that reflect social, economic, and environmental interdependencies, the programme enhances policy coherence and resilience (Keenan and Miles, 2008; Saritas, 2013; Saritas and Anim, 2017). These risks are framed not as externalities to be avoided but as adaptive challenges requiring the continuous reinforcement of societal resilience and institutional flexibility.

Third, while the FP formally adheres to the principle of evidence-based science, certain projects have increasingly highlighted the value of design-led and context-sensitive approaches informed by external expert input. A notable example is the *Future of Cities* project, which reconceptualises the city as a site of policy experimentation and co-design, grounded in local socio-cultural conditions (Tewdwr-Jones, 2015). This project illustrates the FP's potential to transcend national policy-making and serve as a creative platform for subnational governance, community visioning, and spatial imagination.

Together, these strategic orientations demonstrate the FP's evolution into an integrated public policy platform capable of enabling pre-emptive and adaptive policy design. Its institutional and technical development sought to strengthen its role as a laboratory of strategic governance, balancing scientific rigour with democratic legitimacy.

Nevertheless, despite the high performance of individual projects, the third cycle of the FP has also revealed structural limitations. These include weaknesses in policy integration, discontinuities in operational continuity, and insufficient feedback loops. Strategic

fragmentation caused by administrative restructuring or changes in political leadership, as well as an overreliance on technocratic framings, have at times constrained the development of citizen-centred foresight discourses and limited the imaginative scope of policy design.

3.4 UK's ROAMEF Framework and its application to the Foresight Programme

The ROAMEF policy cycle—comprising Rationale, Objectives, Appraisal, Monitoring, Evaluation, and Feedback—represents a comprehensive policy evaluation and performance management framework developed by HM Treasury. As delineated in the UK Government's Green Book (HM Treasury, 2022), ROAMEF offers a structured and iterative approach to fostering policy effectiveness and long-term sustainability. This six-stage framework is designed to guide policymakers through the full lifecycle of a policy, from initial conception to final review, ensuring that interventions are grounded in evidence and responsive to evolving circumstances. Widely adopted across multiple government departments, ROAMEF facilitates systematic planning, implementation, assessment, and continuous refinement of public policy, thereby promoting transparency, accountability, and adaptive governance within the UK's administrative apparatus.

3.4.1 The Six Phases of the ROAMEF Framework

A. Rationale (Justification for Action)

The initial phase of the policy cycle is concerned with establishing the rationale for governmental intervention. At this juncture, policymakers are required to articulate the specific societal, economic, or environmental problem necessitating policy action. This stage entails the presentation of a compelling justification, underpinned by empirical evidence and rigorous analysis, to ensure that any proposed intervention addresses a genuine and substantive issue. The process safeguards against superfluous or duplicative policy measures by anchoring development efforts in a clearly defined and legitimate purpose (Howlett and Ramesh, 2003).

B. Objectives (Setting Goals)

Following the identification of the core issue, this stage involves the formulation of precise and measurable policy objectives. These goals must exhibit congruence with the government's overarching strategic priorities and be framed in accordance with the SMART criteria—

Specific, Measurable, Achievable, Relevant, and Time-bound. Establishing well-defined objectives serves as a critical benchmark for assessing policy performance, thereby enabling rigorous evaluation and accountability mechanisms in subsequent stages (Doran, 1981).

C. Appraisal (Evaluation of Policy Options)

In this phase, a comprehensive appraisal of potential policy options is conducted to identify the most effective and efficient course of action. This evaluative process typically employs analytical techniques such as Cost-Benefit Analysis (CBA) and Cost-Effectiveness Analysis (CEA), which facilitate the comparison of alternative interventions on the basis of their anticipated outcomes and resource requirements. Stakeholder consultations and predictive modelling are often integral to this stage, which is designed to minimise risk and maximise social welfare through judicious use of public resources (HM Treasury, 2022).

D. Monitoring (Tracking Policy Implementation)

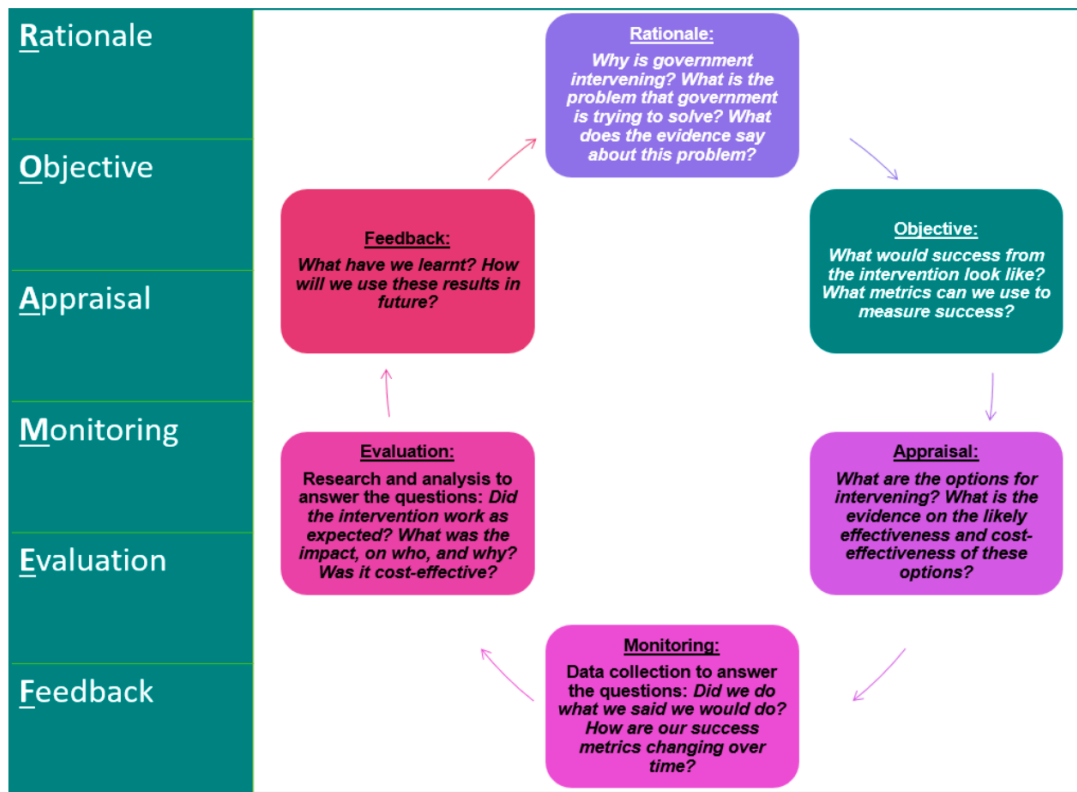
Once implementation is underway, continuous monitoring mechanisms are instituted to assess the extent to which the policy is being delivered as intended. The development of Key Performance Indicators (KPIs) enables the systematic tracking of progress relative to initial objectives. This stage ensures that operational issues are identified promptly and rectified efficiently, thereby preserving alignment with the policy's original intent and facilitating adaptive management as required (Pollitt and Bouckaert, 2017).

E. Evaluation (Assessing Policy Impact)

The penultimate stage involves a rigorous assessment of the policy's effectiveness, efficiency, and equity. A combination of quantitative and qualitative methodologies is employed to determine the extent to which the policy has fulfilled its intended objectives and generated the anticipated benefits. Evaluation also encompasses considerations of cost-effectiveness and unintended consequences, thereby informing decisions regarding the continuation, modification, or cessation of the policy (Vedung, 1997).

F. Feedback (Continuous Learning and Adaptation)

The final stage of the policy cycle underscores the importance of institutional learning and iterative improvement. Insights gleaned from the evaluation phase are systematically integrated into the policymaking process, fostering a feedback loop that enhances the design and implementation of future initiatives. This emphasis on continuous learning and adaptation is fundamental to cultivating a culture of evidence-informed policymaking and long-term policy resilience (Sanderson, 2002).



[Figure 1] The ROAMEF Performance Management Model (HM Treasury, 2020)

3.4.2 The Function and Role of the ROAMEF Policy Cycle

The ROAMEF policy cycle constitutes a policy management framework developed by the UK government with the aim of enhancing transparency, accountability, and coherence in the policymaking process. Through a structured and iterative decision-making model, the ROAMEF framework facilitates the resolution of complex societal challenges, optimises the use of public resources, and supports the design of robust, evidence-informed interventions.

A broad range of UK government departments employ the ROAMEF model to standardise the formulation, implementation, and evaluation of public policy. Its use is particularly prevalent in outcomes-based policymaking (OBP) and adaptive governance strategies (HM Treasury, 2020a; 2020b; Scottish Government, 2022; Welsh Government, 2023). Unlike conventional policymaking processes, which often prioritise short-term objectives, ROAMEF incorporates mechanisms for evaluation and feedback, enabling continuous refinement of policy measures.

Crucially, the ROAMEF cycle institutionalises the principles of evidence-based policymaking (EBP). Policy formulation is expected to be grounded in rigorous analysis and objective data, as opposed to political expediency or anecdotal claims (Head, 2008). Tools such as CBA, CEA,

and KPIs are routinely employed to assess options and inform resource allocation decisions (HM Treasury, 2020b; Welsh Government, 2023).

This analytical rigour is aligned with the principles of adaptive governance, which emphasise iterative learning, stakeholder participation, and the capacity to respond to evolving and interdependent challenges (Ostrom, 2005). The ROAMEF model's feedback loops allow policymakers to learn from past interventions, scale successful approaches, and adjust policies to reflect dynamic socio-economic conditions—thereby preventing stagnation (Howlett, Ramesh and Perl, 2009).

Furthermore, the ROAMEF framework plays a critical role in fostering interdepartmental and inter-agency collaboration. Contemporary public policy issues—such as those pertaining to Integrated Care or Sustainability Planning—require coordinated responses from multiple sectors, including health, education, and environmental governance. ROAMEF provides a unifying structure that supports such cross-sectoral integration and offers a methodological basis for evaluating the efficacy of collaborative efforts (Welsh Government, 2023). Importantly, the framework reinforces an outcomes-oriented orientation in policymaking. The ultimate objective of policy is not mere implementation, but the achievement of measurable and sustainable socio-economic outcomes.

Through systematic evaluation and iterative adjustment, ROAMEF enhances long-term policy effectiveness (Scottish Government, 2023). The model is widely used across UK institutions, linking planning, implementation, and revision. By embedding evidence-based and adaptive principles, ROAMEF equips governments to meet complex and shifting governance demands. It thus goes beyond a policy evaluation tool to serve as a foundational framework for coordination and sustainable outcomes.

While the exact origins of ROAMEF remain unclear, this study—especially Chapter 7—explores its conceptual parallels with Harold Lasswell's classical policy cycle models, notably his five- and seven-stage frameworks (Lasswell, 1956; 1957). Lasswell viewed policymaking as a cyclical, interactive process of intelligence-gathering, formulation, implementation, evaluation, and feedback. This mirrors ROAMEF's six stages: Rationale, Objectives, Appraisal, Monitoring, Evaluation, and Feedback.

ROAMEF's emphasis on feedback and iterative learning reflects Lasswell's principles of cyclicity and information-based adaptation. Thus, ROAMEF should be seen not as a static checklist, but as a modern operationalisation of Lasswell's theoretical propositions.

In today's fast-changing policy environment, ROAMEF institutionalises two core principles: cyclical decision-making and ongoing responsiveness. These embed strategic learning and continuous improvement at the centre of public governance. In this way, ROAMEF can be regarded as a practical evolution of Lasswell's policy cycle—recalibrated to meet the demands of 21st-century policymaking.

3.4.3 The ROAMEF Policy Cycle in the UK National Foresight Projects

The UK Government's Foresight Project applies the ROAMEF policy cycle to systematically identify emerging risks and opportunities and to develop strategic, future-oriented responses. This iterative framework supports policy coherence and effectiveness by embedding evidence-informed decision-making, ongoing monitoring, and adaptive learning—ensuring responsiveness to a rapidly changing socio-political and environmental landscape.

Within the UK Government's Futures Model, as outlined in *Future-Proof Policy: A Guide to Using Foresight in Policy-Making* (UK Government, 2021a), the traditional ROAMEF cycle has been adapted. Specifically, the final two stages—Evaluation and Feedback—have been merged into a single, integrated phase. Such transformation seems to reflect the need for a more agile policy process in which evaluative insights feed directly into strategic refinement, closing the loop between implementation and foresight.

The Adapted ROAMEF (Futures Model) in the Foresight Project

1. Rationale

The Foresight Project initiates the policy cycle by articulating a compelling rationale for intervention, typically derived from the early identification of emerging risks and latent opportunities. This anticipatory approach enables policymakers to align long-term strategic objectives with plausible future developments, rather than remaining confined to reactive, short-term imperatives.

2. Objectives

Building upon the rationale, the project delineates specific, measurable, and scenario-responsive objectives. These goals are calibrated against a range of plausible futures—

for example, enhancing national food security in anticipation of climate-induced disruptions—thereby ensuring strategic policy orientation.

3. Appraisal

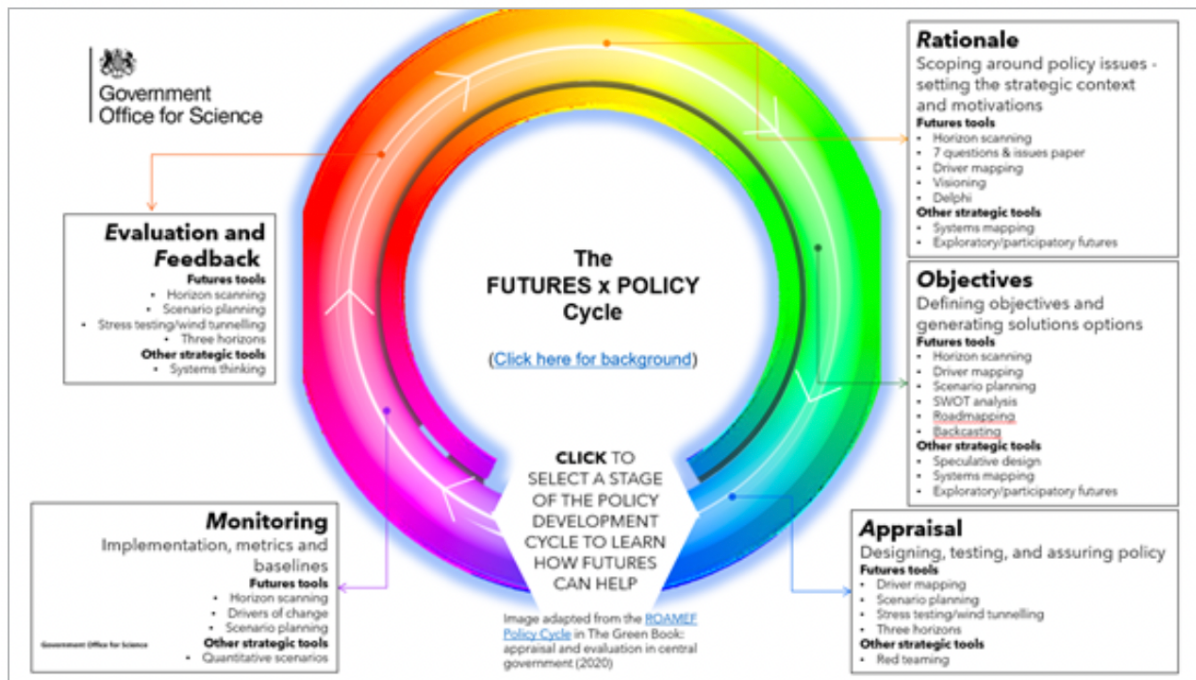
During this phase, alternative policy measures are systematically evaluated for their feasibility, effectiveness, and potential trade-offs. Appraisal methodologies frequently include CBA, risk assessment, and scenario testing, equipping policymakers with a robust evidence base from which to determine optimal policy trajectories.

4. Monitoring

Following implementation, the monitoring phase entails the deployment of real-time performance tracking systems. KPIs are established to gauge the extent to which policy actions fulfil predefined objectives. This allows for agile policy recalibration where required, ensuring responsiveness to both anticipated and emergent developments.

5. Evaluation and Feedback

In the adapted Futures Model, the traditional stages of Evaluation and Feedback are merged into a single, iterative mechanism. This integrated process is central to fostering a learning-oriented policy environment in which evaluative outcomes are seamlessly reinvested into the foresight cycle. By embedding lessons from past interventions into future planning, the model institutionalises adaptive governance and enhances strategic resilience (UK Government, 2021a).



[Figure 2] The Futures cycle mapped to the ROAMEF model (GO-Science, n.d.)

By embedding lessons from past interventions into future planning, the model institutionalises adaptive governance and enhances strategic resilience (UK Government, 2021a). Through the consolidation of the evaluation and feedback phases, the Futures Model offers a more flexible and iterative policy cycle structure compared to the conventional ROAMEF framework. This adaptation facilitates more immediate learning and real-time responsiveness, thereby reinforcing the model’s capacity to remain aligned with evolving policy contexts and future-oriented challenges.

3.5 Challenges of the ROAMEF Framework

The integration of long-term strategic foresight into UK policymaking has long been constrained by both methodological and institutional factors. While frameworks such as the ROAMEF policy cycle are designed to promote structured, evidence-based decision-making, their application within complex and dynamic governance environments reveals inherent limitations. Simultaneously, the institutional logic of the Westminster model—characterised by centralisation, hierarchical authority, and short-term political incentives—often hinders the systematic incorporation of forward-looking analysis into policy development.

This section critically examines the interplay between these methodological and institutional constraints. It first explores the limitations of the ROAMEF model in capturing the emergent, non-linear, and multi-actor dynamics that characterise complex policy systems. It then considers how the Westminster model's structural and cultural features impede the translation of long-term foresight into effective policy action, drawing on the UK's response to the COVID-19 pandemic as a key illustration. Finally, the section analyses the combined effect of these factors, highlighting how the interaction between methodological rigidity, institutional inertia, and complex system dynamics produces significant challenges for anticipatory governance. Through this integrated perspective, the section seeks to provide a comprehensive understanding of why long-term strategic objectives frequently fail to materialise within the UK context, and to identify avenues for enhancing the adaptive capacity of policy cycles.

3.5.1 Inherent Limitations of the ROAMEF Model in Complex Systems

The ROAMEF policy cycle, while offering a structured framework for policy analysis and evidence-based decision-making, exhibits notable limitations when applied to complex policy environments characterised by uncertainty, dynamism, and interdependent actors. A primary concern lies in the model's reliance on quantitative tools, such as cost-benefit analysis (CBA) and key performance indicators (KPIs), which may inadequately capture the emergent, non-linear, and iterative nature of policy change (Cairney, 2012; 2019). Complexity theory emphasises that policy environments rarely follow fixed or predictable trajectories; rather, they are shaped by interactions among multiple actors whose behaviours, resources, and incentives continually evolve. In this context, the stage-based rigidity of the ROAMEF framework risks oversimplifying these interactions, potentially obscuring unintended consequences, emergent behaviours, and feedback effects that arise over time.

Moreover, the prioritisation of quantitative evidence within ROAMEF can inadvertently marginalise qualitative dimensions that are crucial to understanding policy processes. Institutional culture, informal norms, stakeholder relationships, and power asymmetries all profoundly influence how policies are formulated, implemented, and evaluated (Cairney, 2015). For instance, a purely metric-driven assessment may fail to capture the subtleties of interdepartmental negotiation or the informal coordination mechanisms that underpin successful policy adaptation. Similarly, reliance on pre-defined evaluation criteria may inhibit the recognition of emergent issues, especially in volatile contexts such as climate change adaptation or pandemic response, where new challenges and uncertainties continuously arise.

Another critical limitation is the assumption that evaluation will seamlessly inform subsequent stages of the policy cycle. In reality, policy development often experiences delays in learning, unintended interactions between policy instruments, and the need to adapt in response to rapidly changing conditions (Cairney, 2016; 2018). Feedback loops are rarely immediate or linear, and the conventional ROAMEF cycle may not adequately account for the recursive and iterative nature of complex adaptive systems. In practice, this can lead to misaligned priorities, delayed responses to emerging crises, and suboptimal policy outcomes, particularly when policymakers assume that linear evidence translation will automatically improve subsequent stages of intervention. Consequently, the ROAMEF model, in its conventional form, may struggle to accommodate the adaptive and iterative processes required in complex governance settings, highlighting the need for more flexible, learning-oriented approaches to policy design.

3.5.2 Westminster Model as a Constraint on Long-Term Strategic Foresight

In addition to the inherent methodological limitations of the ROAMEF model, the structural characteristics of the Westminster model further constrain the integration of long-term strategic foresight into policy development. The Westminster system is highly centralised and hierarchical, concentrating decision-making authority within a narrow political elite and fostering a top-down, ministerial-driven approach. While this model facilitates clarity in accountability and swift decision-making, it also engenders a reactive, short-termist policymaking culture, ill-suited to addressing long-term, emergent, or intergenerational challenges (Flinders, 2009). Long-term strategic initiatives often require sustained, cross-departmental coordination and iterative learning processes, yet the Westminster model's emphasis on ministerial control and electoral accountability can fragment these efforts, leading to discontinuity and inefficiency.

The UK government's response to the COVID-19 pandemic illustrates this structural tension. Despite the existence of a national pandemic preparedness strategy established in 2006, the recommendations produced by foresight exercises were not effectively operationalised when the crisis emerged (Barker et al., 2006; House of Commons, 2021). Political leaders emphasised commitments to “following the science” and ensuring transparency, yet institutional risk aversion, bureaucratic inertia, and short-term political calculations impeded rapid, coordinated action. Critical failures—including shortages of personal protective equipment (PPE), uneven vaccine distribution, and inconsistent public health messaging—

highlight how centralised authority and rigid hierarchical decision-making can compromise the practical application of long-term foresight (Cairney, 2021).

Beyond emergency contexts, long-term strategic planning is frequently undermined by electoral cycles and shifting political priorities. Successive changes in leadership often prioritise immediate political gains over sustained strategic objectives, generating a pattern of discontinuity and reducing the credibility of foresight mechanisms. This volatility reinforces the gap between aspirational policy discourse and implementation, impeding the development of coherent, enduring governance frameworks (Flinders, 2009). The Westminster model's embedded norms—centralisation, ministerial dominance, and short-term accountability—therefore interact with policy methodologies, such as ROAMEF, to limit the operationalisation of anticipatory governance, particularly in complex, multi-actor, and dynamic policy environments.

3.5.3 Interplay Between ROAMEF, Westminster Constraints, and Complex Systems

The complex challenges of embedding long-term foresight in UK policymaking emerge most clearly when considering the interaction between the ROAMEF model, Westminster institutional norms, and the characteristics of complex adaptive systems. The rigidity of the ROAMEF framework in handling non-linear feedback and emergent dynamics is exacerbated by the centralised, hierarchical, and politically short-termist nature of the Westminster system. These combined factors constrain the adaptive capacity of the policy process, reducing the effectiveness of iterative learning and limiting the translation of strategic foresight into actionable policies.

Policy failures and institutional vulnerabilities in this context are therefore not merely attributable to methodological shortcomings or political culture in isolation. Rather, they arise from the interaction of these elements within complex adaptive systems, where multiple actors, interdependencies, and emergent behaviours shape outcomes in unpredictable ways. For example, delays in policy learning may result not only from inadequacies in evaluation methods, but also from institutional inertia, fragmented authority, and the misalignment of incentives across governance levels. Similarly, the marginalisation of qualitative and networked dynamics—such as informal policy coalitions, interdepartmental collaboration, or stakeholder influence—can further inhibit effective adaptation and innovation within complex governance contexts.

This interplay underscores the importance of adopting an integrated perspective that recognises both structural and methodological constraints when assessing policy cycles and foresight initiatives. Understanding how ROAMEF's limitations interact with Westminster model norms and complex system dynamics allows policymakers to identify points of failure, design mechanisms for iterative learning, and develop more resilient governance frameworks. Ultimately, a nuanced appreciation of these interactions is essential for enhancing the UK's capacity to operationalise long-term strategic foresight, anticipate systemic risks, and respond effectively to emergent challenges in an increasingly complex policy environment.

3.6 Conclusion

This chapter has critically examined the development, strengths, and limitations of the ROAMEF policy cycle within British public governance, with a particular focus on its application in strategic foresight. While ROAMEF provides a structured, evidence-informed framework for policy design and evaluation, its fundamentally linear logic, combined with the institutional constraints of the Westminster model—such as centralised decision-making, strong ministerial control, and rigid departmental silos—renders it increasingly ill-suited to the complex governance environment of the twenty-first century and complicates the practical implementation of anticipatory policy thinking.

Drawing on complexity theory and principles of adaptive governance (Cairney and Geyer, 2015; Ostrom, 2005), this chapter has emphasised the need for a more agile and integrative foresight framework capable of addressing the volatility, interdependence, and uncertainty inherent in contemporary policy contexts. In particular, the adaptation of ROAMEF within the UK Government's Foresight Futures Model—through the integration of evaluation and feedback stages—demonstrates an initial move towards iterative learning and institutional reflexivity (GO-Science, 2021c).

However, these changes remain partial. The ideal evolution of the UK's national foresight programme requires moving beyond the procedural limitations of traditional policy cycles and accommodating the structural constraints of Westminster governance by embedding multidimensional, co-creative, and anticipatory approaches at its core. Strategic foresight should not be regarded as a mere supplementary function, but as a meta-capability that infuses

long-term, future-oriented thinking across all stages of policymaking. Moreover, theoretical integration must be reflected in practical policy processes to exert tangible impact, necessitating the institutionalisation of foresight as a continuous, interdisciplinary, and participatory practice. Only through such an integrated approach can public institutions enhance policy resilience and relevance amid a rapidly transforming global environment.

To support this transition, the UK should look beyond its existing frameworks and selectively draw on successful foresight practices in other countries. The following chapter examines the US—widely regarded as a leader in national-level foresight—as a comparative case, offering opportunities for institutional learning and insight.

Chapter 4. Literature Review 3: Foresight and Policymaking in the United States

4.1 Introduction

The study of the future has long been shaped by humanity's desire to envision more ideal societies. From Thomas More's *Utopia* (1516), which laid the literary foundations for imagining better futures, to the writings of H.G. Wells, who anticipated the social consequences of technological advancement, early futures thinking reflected both a philosophical and practical concern with the long-term trajectory of human development. Beyond literary or speculative origins, the impulse to anticipate the future is deeply rooted in the human need to navigate uncertainty and ensure survival (Bell, 1997; Strathern, 2007). In this sense, foresight represents not merely an intellectual exercise but a strategic imperative and in the realm of public policy it is of particular importance for effective governance, insofar as it entails anticipating and preparing for emerging risks and opportunities. In the US, from scenario planning during the Cold War to the environmental foresight movements of the 1970s, and more recent applications in global risk analysis and technological innovation, the U.S. has developed a distinct institutional trajectory in long-term policy planning.

This chapter examines the evolution of strategic foresight within American governance, tracing its development from the post-war period to the present. Beginning with the Truman administration, it considers how foresight practices have been shaped by national security, environmental concerns, and global challenges, before situating the US as a comparative counterpart to the UK. First, Section 4.2 analyses how the Truman and Eisenhower administrations employed the National Security Strategy and technological foresight to address Cold War security challenges, while the Kennedy and Johnson administrations utilised long-term crisis management and the Apollo Programme to embed foresight into national strategy. Particular emphasis is placed on nuclear strategy and geopolitical competition. Second, Section 4.3 explores the growing importance of environmental issues between 1969 and 1981. It traces the development of foresight practices through Nixon's environmental policies, Carter's energy security agenda, and the more limited environmental foresight approaches of the Reagan and Bush administrations, thereby demonstrating how foresight expanded to encompass ecological risks, resource management, and long-term sustainability. Third, Section

4.4 examines the period from the 1990s to the present, highlighting the rise of global foresight. It considers Clinton's and Bush's emphasis on global leadership, including both the strengths and the limits of American engagement in global environmental issues, the reinforcement of foreign policy in response to terrorism, and the early articulation of anticipatory governance. It then turns to the Obama administration's engagement with transnational challenges such as climate change, technological transformation and economic interdependence, before contrasting these with the Trump administration's more sceptical stance and the Biden administration's focus on technological innovation and climate change response. Together, these developments illustrate the shift from a national security orientation towards a more global perspective. Taken as a whole, the analysis identifies three overarching phases in the evolution of American foresight: the Cold War era, the environmental foresight era, and the rise of global foresight. Within each phase, the specific contributions of successive administrations are situated in their institutional and political contexts. Finally, Section 4.5 sets out the rationale for selecting the US as the comparative case for the UK.

In doing so, it highlights the key contrasts in institutional design, political culture, and strategic orientation, thereby providing insights into the broader role of foresight within liberal democratic governance.

Britain			United States		
Prime Minister	Party	Term	President	Party	Term
Clement Attlee	Labour	1945-1951	Franklin D. Roosevelt	Democratic	(1933-)1945
Winston Churchill	Conservative	1951-1955	Harry S. Truman	Democratic	1945-1953
Anthony Eden	Conservative	1955-1957	Dwight D. Eisenhower	Republican	1953-1961
Harold Macmillan	Conservative	1957-1963	John F. Kennedy	Democratic	1961-1963
Alec Douglas-Home	Conservative	1963-1964	Lyndon B. Johnson	Democratic	1963-1969
Harold Wilson	Labour	1964-1970	Richard Nixon	Republican	1969-1974
Edward Heath	Conservative	1970-1974	Gerald Ford	Republican	1974-1977
Harold Wilson	Labour	1974-1976	Jimmy Carter	Democratic	1977-1981
James Callaghan	Labour	1976-1979	Ronald Reagan	Republican	1981-1989
Margaret Thatcher	Conservative	1979-1990	George H. W. Bush	Republican	1989-1993
John Major	Conservative	1990-1997	Bill Clinton	Democratic	1993-2001
Tony Blair	Labour	1997-2007	George W. Bush	Republican	2001-2009
Gordon Brown	Labour	2007-2010	Barack Obama	Democratic	2009-2017
David Cameron	Conservative	2010-2016	Donald Trump	Republican	2017-2021
Theresa May	Conservative	2016-2019	Joe Biden	Democratic	2021-2025
Boris Johnson	Conservative	2019-2022	Donald Trump	Republican	2025-Present
Liz Truss	Conservative	2022			
Rishi Sunak	Conservative	2022-2024			
Keir Starmer	Labour	2024-Present			

[Table 2] UK and US Leaders and Political Parties Since 1945: A Comparative Overview, by Author

4.2 Cold War Era: Foresight and National Security (1945–1991)

The Cold War (1947–1991) was a defining period in which strategic foresight became integral to U.S. national security policy. Facing the existential threat of the Soviet Union, the U.S. invested heavily in long-term defence planning, technological innovation, and intelligence gathering. The risk of nuclear conflict and the unpredictability of the arms race compelled policymakers to anticipate and pre-empt future threats. Beyond military tensions, the Cold War encompassed economic and diplomatic rivalries, further heightening the need for foresight. U.S. presidents increasingly recognised the importance of strategic anticipation in countering Soviet influence, leading to the development of deterrence strategies and conflict prevention measures grounded in foresight methodologies.

A. Truman and Eisenhower Administrations (1945–1961)

a. National Security Strategy

In the aftermath of the WWII, President Harry S. Truman institutionalised strategic foresight through the National Security Act of 1947, which established the National Security Council (NSC) to coordinate U.S. security policy and support decision-making informed by future scenarios (NSC, 1947). A key focus of U.S. defence strategy during this period was the development of nuclear capabilities. As the Soviet Union advanced its own nuclear programme, the U.S. adopted a deterrence strategy to maintain military superiority and strategic stability.

Truman's administration prioritised nuclear armament as a means to shape future defence postures, thereby demonstrating a clear alignment between technological investment and foresight-informed policy. Under President Dwight D. Eisenhower, this strategic orientation was further consolidated through Project Solarium (1953), a high-level initiative to articulate distinct policy responses to Soviet expansionism. The outcome was formalised in NSC 162/2, a foundational document that crystallised U.S. Cold War strategy and elevated strategic foresight to a central element of national planning (Immerman, 2010).

Eisenhower's approach expanded into the Eisenhower Doctrine, which aimed to counter Soviet influence in strategic regions such as the Middle East. This doctrine not only extended the logic of nuclear deterrence but also served as a blueprint for future-oriented regional engagement strategies.

Notably, Herman Kahn of the RAND Corporation emerged as a leading figure in strategic thinking. In *On Thermonuclear War* (1960), Kahn analysed potential nuclear scenarios, arguing that deterrence required more than stockpiling—it demanded credible crisis management and strategic communication (Kahn, 1960; Ghamari-Tabrizi, 2005).

b. Technological Foresight

The early Cold War witnessed major technological advances, particularly in intercontinental ballistic missiles (ICBMs) and space exploration, both of which became focal points of U.S. foresight strategy. The development of ICBMs marked a transformative moment in military technology, enabling transcontinental strike capabilities that heightened the stakes of the U.S.–Soviet deterrence dynamic (McDougall, 1985).

The US also prioritised missile defence systems to counter Soviet offensive capabilities, a foresight-driven endeavour to maintain strategic balance. The 1957 launch of Sputnik by the Soviet Union served as a catalyst for enhanced U.S. investment in space technology and strategic foresight, prompting the establishment of NASA in 1958. Beyond its scientific significance, space exploration was perceived as vital to military and geopolitical strategy.

In the realm of methodological innovation, Olaf Helmer—a member of the RAND Corporation—pioneered the Delphi Method, a structured technique for forecasting under conditions of uncertainty (Helmer, 1967). Similarly, Daniel Ellsberg contributed to the understanding of strategic uncertainty, particularly in extreme scenarios such as nuclear conflict. His work illuminated the psychological and informational dimensions of decision-making under existential risk (Ellsberg, 2017; Ellsberg, 2003).

B. The Kennedy and Johnson Administrations (1961–1969)

a. Crisis Management and Long-Term Strategy

President John F. Kennedy exemplified the practical application of strategic foresight during the Cuban Missile Crisis of 1962. The Soviet installation of nuclear missiles in Cuba precipitated a confrontation that brought the superpowers to the brink of nuclear war.

Kennedy's administration utilised foresight methodologies—particularly scenario analysis—to anticipate Soviet intentions and develop calibrated responses (Allison and Zelikow, 1999).

Kennedy's success in de-escalating the crisis without resorting to direct military conflict demonstrated the efficacy of preparing for multiple plausible futures—a core tenet of futures studies. Scenario planning, as advanced by thinkers such as Herman Kahn, was instrumental in enabling Kennedy to avoid catastrophic outcomes and secure a negotiated resolution (Kahn, 1960).

b. The Space Race

President Kennedy's 1961 pledge to land a man on the moon within a decade remains a landmark example of strategic foresight aimed at asserting U.S. technological leadership and global prestige. Delivered in a speech to Congress, this commitment was a calculated move to enhance American influence during the Cold War (McDougall, 1985).

To realise this vision, Kennedy expanded NASA's mandate through the Apollo Programme, which embodied both scientific ambition and geopolitical strategy. His foresight encompassed not only technological achievement but also national mobilisation and ideological competition.

Central to this effort was Wernher von Braun, a former German rocket engineer and lead architect of the Saturn V rocket, whose leadership culminated in the successful Apollo 11 landing in 1969—a defining moment for U.S. strategic and symbolic power (Neufeld, 2007). The programme employed scenario-based planning to manage risks, institutionalising foresight within U.S. science and technology policy (Logsdon, 2010).

Kennedy's lunar initiative thus exemplifies how strategic foresight can serve as a tool for integrating scientific innovation with national objectives, turning the space race into a platform for demonstrating future-oriented governance.

4.3 The Environmental Foresight Era: 1970s–1990s

During the Cold War, national security predominated as the central focus of strategic policy. However, the 1970s and 1980s witnessed a notable shift, wherein environmental concerns began to be conceptualised as integral components of strategic foresight. American presidents increasingly incorporated long-term environmental thinking into governance, particularly in relation to climate change and resource management. This period marked a critical juncture in which environmental foresight was institutionalised as a significant pillar of national policy. Issues such as resource scarcity and energy dependence came to be recognised as matters intricately linked with national security. Moreover, it was during this era that the notions of sustainable development and environmental protection emerged as prominent issues on the global stage.

A. The Nixon and Carter Administrations (1969–1981)

a. Environmental Policy

President Richard Nixon initiated a decisive federal response to environmental issues by establishing the Environmental Protection Agency (EPA) in 1970 (Flippen, 2000). The early 1970s heralded the international rise of numerous environmental challenges, including climate change, air pollution, acid rain, and ozone layer depletion. In 1972, James Lovelock's Gaia hypothesis was first publicised, positing the Earth as a self-regulating entity and warning against the anthropogenic disruption of ecological balance (Lovelock, 1979). The EPA, grounded in such theoretical frameworks, became the primary federal institution for formulating and implementing policies concerning environmental protection and resource management. It addressed key issues such as air and water quality, and the depletion of natural resources.

Nixon further demonstrated environmental foresight through the enactment of the National Environmental Policy Act (NEPA), which mandated that federal agencies evaluate the environmental impact of all major initiatives (Andrews, 2006). NEPA represented a foundational institutionalisation of environmental foresight, requiring the anticipation and mitigation of potential ecological risks prior to policy implementation. The Nixon administration thus attempted to establish systems to foresee and respond to the threats posed

by pollution and climate change. These efforts laid critical groundwork for sustainable development, influencing environmental policy not only within the US but globally. Importantly, Nixon's era marked the beginning of the conceptual alignment between environmental concerns and national security imperatives (Schoenbrod, 2005).

b. Carter's Energy Vision

In the wake of the 1973 oil crisis, President Jimmy Carter pursued the strategic objective of energy independence by creating the DOE and prioritising the development of alternative energy sources (Ryan, 1979; Anders, 1980). This initiative was aimed at reducing dependence on foreign energy resources such as oil and natural gas, thereby bolstering national security through strategic foresight. Carter's administration promoted renewable energy technologies and energy efficiency, reflecting a paradigmatic example of foresight in energy policy.

Carter's policies sought to diversify energy sources and mitigate the uncertainties associated with energy crises. His administration invested in technological innovation, particularly in solar and wind energy, as a forward-looking response to prospective energy shortages. These measures embodied a dual focus on environmental protection and national security, encapsulating the essence of strategic foresight (Ryan, 1979; Anders, 1980)

B. The Reagan and Bush Administrations (1981–1993)

a. Challenges to Environmental Foresight

The administrations of Ronald Reagan and George H. W. Bush were characterised by a tendency to de-emphasise environmental concerns in favour of short-term economic growth and military priorities (Vig and Kraft, 2000). Despite the increasing scientific consensus regarding climate change during this period, both administrations exhibited reluctance in adopting proactive environmental policies, focusing instead on deregulation and market liberalisation (Porter and van der Linde, 1995).

Reagan's economic strategy—commonly referred to as “Reaganomics”—prioritised tax cuts, deregulation, and increased defence spending (Stein, 1994). This economic philosophy led to substantial reductions in regulatory oversight, including a notable 20% budget cut to the EPA

(Andrews, 2006). Consequently, the Reagan administration subordinated long-term environmental foresight to immediate economic objectives, effectively delaying action on critical environmental threats such as climate change. Emphasis was placed on economic flexibility for businesses, often at the expense of environmental safeguards.

Similarly, while President George H. W. Bush acknowledged the legitimacy of scientific findings concerning climate change, his administration did not enact robust domestic or international measures to address the issue (Ungar, 1992). Although he accepted climate change as a global concern, economic growth and industrial freedom were prioritised over the imposition of environmental regulations. Notably, the Bush administration declined to ratify the Kyoto Protocol, a major international agreement aimed at reducing greenhouse gas emissions, citing the potential economic detriment it posed to the US (Dessler and Parson, 2006). His administration's policy orientation continued to favour industrial deregulation and economic liberalisation, postponing comprehensive responses to long-term environmental risks.

b. International Environmental Awareness

Despite a general reluctance toward environmental governance, President Reagan did sign the 1987 Montreal Protocol, a landmark treaty to protect the ozone layer. This action reflected a degree of environmental foresight, particularly in alignment with scientific consensus. The Protocol is widely regarded as a successful case of international cooperation, demonstrating the potential of multilateral governance to anticipate and address environmental crises. However, broader strategic foresight regarding climate change remained limited during the Reagan and George H. W. Bush administrations. This reluctance stemmed primarily from three factors: the prioritisation of short-term economic growth, industrial lobbying, and the dominance of military objectives.

Firstly, short-term economic growth was a central priority for both the Reagan and Bush administrations. Reaganomics, the hallmark of Reagan's economic agenda, promoted tax cuts, deregulation, and increased military spending to spur rapid growth. This approach aimed to empower private enterprise and liberalise markets, often at the cost of regulatory oversight (Revesz, 1997; Vig and Kraft, 2009). Industries viewed environmental regulations as impediments to competitiveness, prompting deregulatory measures. While these policies stimulated short-term economic activity, they relegated long-term environmental planning to a secondary concern (Hejny, 2018; Unlap and McCright, 2015).

Secondly, political alignment with industrial interests shaped both administrations' environmental policies. The Reagan and Bush governments maintained close ties with fossil fuel and manufacturing sectors, which lobbied against regulation, citing its impact on profits. Reagan's emphasis on "regulatory relief" echoed this agenda, favouring economic flexibility over environmental foresight (Unlap and McCright, 2015). Similarly, President Bush acknowledged environmental challenges but prioritised industrial competitiveness, marginalising ecological foresight in favour of immediate growth (Hejny, 2018).

Thirdly, military priorities further sidelined environmental concerns. During the Cold War, both administrations emphasised defence spending and strategic dominance, especially in competition with the Soviet Union. Programmes like Reagan's Strategic Defense Initiative ("Star Wars") reflected a focus on military foresight, while environmental issues remained peripheral (Vig and Kraft, 2009; Revesz, 1997). The Bush administration continued this trend, particularly during the Gulf War, where national security priorities overshadowed ecological considerations (Nye, 2003; Hejny, 2018).

4.4 The Rise of Global Foresight: 1990s–Present

From the 1990s into the early 21st century, strategic foresight became a significant factor in American federal agencies, particularly in areas such as climate change, technological innovation, and space exploration. During this period, environmental issues and technological advancements began to play an integral role in policymaking. Many nations enhanced their strategic approaches to solving global problems, highlighting a growing awareness of interconnected global challenges. However, while some executive and legislative bodies began to institutionalise strategic foresight, there remained political limitations regarding the establishment of a presidential-level office dedicated to foresight, as advocated by both current and former policymakers.

A. The Clinton and Bush Administrations (1993–2009)

a. The Limits of Global Environmental Leadership

President Bill Clinton supported international efforts to address climate change, notably endorsing the Kyoto Protocol, though the US ultimately did not ratify it (Dessler and Parson, 2006). The Clinton administration promoted anticipatory approaches to climate change but prioritised economic growth over comprehensive environmental action, maintaining a non-cooperative stance on international agreements. While advocating for foresight in climate change policy, the administration's primary focus was on maintaining the competitiveness of the US economy, leading to delays in addressing long-term environmental challenges (Selin and VanDeveer, 2007). This prioritisation of domestic economic interests over environmental cooperation led to the postponement of more proactive actions on climate change.

Meanwhile, Vice President Al Gore consistently argued that climate change was a global issue that required an international agreement. Through his policy efforts, Gore sought to position the US as a leader in addressing climate change, working hard to gain domestic support for ratifying the Kyoto Protocol (Gore, 2006). As the founder and chairman of The Climate Reality Project, Gore continues to advocate for global cooperation on climate change, focusing on raising awareness about the issue and promoting international collaboration for sustainable energy and environmental change.

b. Focus on the War on Terror and Global Foreign Policy

President George W. Bush, after the 9/11 attacks, made the War on Terror the central focus of US foreign policy. In this context, international security became the primary objective, with counterterrorism dominating the administration's foreign policy agenda (Record, 2003). However, on environmental issues such as climate change, Bush's administration took a more passive approach. Despite acknowledging the scientific consensus on climate change, Bush refused to ratify the Kyoto Protocol and adopted a non-cooperative stance on international environmental agreements (Hovi, Sprinz, and Underdal, 2009). The Bush administration viewed climate change not as an urgent matter but as a challenge to be balanced with domestic political priorities and economic growth, with national security and short-term economic objectives taking precedence over long-term environmental foresight.

c. Anticipatory Governance

The concept of Anticipatory Governance emerged in the late 1990s as a framework for addressing future uncertainties and enabling governments to tackle future challenges. This concept seeks to inform policymaking by considering the long-term effects of current decisions,

thus fostering more effective and sustainable solutions. Leon S. Fuerth, former National Security Adviser to Vice President Al Gore, integrated this concept into strategic decision-making, emphasising the need for government preparedness in facing future changes (Fuerth, 2009). He advocated for applying complexity theory to anticipate long-term challenges and suggested that future-oriented governance approaches were essential for addressing critical issues.

B. The Obama, Trump, and Biden Administrations (2009–2024)

a. Global Foresight in Obama's administration

President Barack Obama's climate agenda offers a paradigmatic case of strategic foresight in governance. While the US lacked a formal presidential-level office for anticipatory governance, the Obama administration effectively operationalised foresight through existing agencies, notably the EPA and DOE. These institutions embedded long-term planning and regulatory foresight into policies addressing climate change, clean energy, and sustainability. The administration framed climate change not merely as an environmental issue but as a long-range challenge with implications for national security, economic competitiveness, and global leadership.

The 2015 Paris Agreement, which the US signed under Obama, marked a key step in institutionalising long-term climate strategy (Dimitrov, 2016). Initiatives like the EPA's Clean Power Plan exemplified foresight-led governance by setting multi-decade carbon reduction targets while incentivising renewable energy investment (EPA, 2015). Concurrently, the DOE's focus on clean energy innovation—via funding for solar, wind, storage, and grid modernisation—reflected a belief in technological progress as essential to climate resilience and industrial leadership (DOE, 2016).

Obama's strategy thus illustrates how strategic foresight can be effectively applied within existing bureaucratic structures, even in the absence of a centralised foresight authority. Through interagency coordination, long-term risk framing, and cross-sectoral innovation policies, the administration operationalised anticipatory governance as a practical approach to future-proofing national policy in the face of complex global challenges.

b. Trump's Disregard for Long-Term Policy

President Donald Trump's administration, by contrast, downplayed long-term environmental issues like climate change, focusing instead on short-term economic growth and industrial protection. Trump's decision to withdraw from the Paris Agreement in 2017 marked a significant reduction in the US's role in international climate negotiations, weakening global efforts to combat climate change. Trump's administration prioritised fossil fuel industries, including oil, gas, and coal, deregulating these sectors to stimulate economic growth, disregarding the scientific consensus on climate change (Congressional Budget Office, 2024).

Trump's policies shifted focus away from long-term environmental foresight, placing greater emphasis on industrial growth and economic flexibility. His administration downplayed the importance of scientific research on climate change, often portraying the issue as a natural phenomenon or a scientific dispute (Oreskes and Conway, 2010). The focus on industrial protection led to the sidelining of anticipatory governance, despite the continued efforts of federal agencies like the EPA and DOE to exchange knowledge and foster long-term policy solutions.

c. Biden's Technological Innovation and Climate Change Response

President Joe Biden placed climate change and clean energy at the core of his strategic agenda, setting ambitious net-zero carbon targets (White House, 2021). His administration adopted a long-term, science-based approach, reversing the passive stance of the Trump era. Framing climate change as both a national security threat and economic opportunity, Biden rejoined the Paris Agreement and pursued a green economic agenda. His policies emphasised clean energy development and technological innovation, including wind, solar, and battery storage.

Biden's climate strategy highlights the practical challenges of applying strategic foresight. Such approaches have often encountered political resistance, largely due to concerns over the social costs associated with economic instability and the energy transition. While foresight aids in preparing for future risks, implementation is often constrained by short-term economic and political realities (Fuerth & Faber, 2012). Long-term goals—such as decarbonisation and energy innovation—can bring short-term disruptions, leading some voters to view climate policy as economically detrimental. As a result, they have tended to constrain politicians'

willingness to pursue more proactive foresight initiatives. Critics have pointed to rising energy prices and employment insecurity as among the principal factors behind popular and industrial opposition, and as a major reason for Biden's failure to secure re-election in 2024 (Steinberg et al., 2024).

4.5 Why the United States Was Selected as a Comparative Case to the United Kingdom

The US was selected as a comparative case for the UK because its approach to institutionalised strategic foresight offers complementary perspectives and practical lessons that can inform the development of UK programmes. Since 1993, the UK has established an integrated, government-wide Foresight Programme, and more recently, the Government Foresight Function under Go-Science, a body within the Department for Science, Innovation and Technology (DSIT), has led these initiatives by coordinating foresight activities across departments. By contrast, the US is characterised by a decentralised approach. Agencies such as the Environmental Protection Agency (EPA), the National Intelligence Council (NIC), the (United States) Department of Agriculture (USDA), and the Government Accountability Office (GAO) conduct foresight activities tailored to their specific missions and mandates. These activities range from environmental risk assessment and climate resilience planning to strategic intelligence and technological foresight, demonstrating how foresight can be applied in a context-specific manner within different institutional settings.

The decentralised U.S. model also offers practical lessons because it incorporates feedback loops and iterative monitoring that enable regular updates to the foresight system, ensuring responsiveness within a complex governance structure. While the UK's centralised model prioritises coordination, standardisation, and government-wide integration, the American approach emphasises flexibility, experimentation, and agency-specific adaptation. For example, the EPA has developed foresight methodologies for long-term environmental risks and clean energy transitions, the NIC addresses geopolitical and security futures, and the USDA conducts Horizon Scanning to identify emerging trends and risks in agriculture and food systems. These varied approaches illustrate that decentralisation is not a weakness, but rather a strength, allowing for more effective management of sector-specific uncertainties.

Moreover, the U.S. model demonstrates that strategic foresight can be implemented within existing bureaucratic and political structures without a single centralised authority. Although

the absence of a presidentially directed foresight office presents coordination challenges, it also encourages inter-agency collaboration, knowledge sharing, and the development of best practices. This contrasts with the UK's centralised model, which, while promoting cohesion, may limit departmental innovation and rapid responsiveness, thus underscoring the importance of balancing centralisation with adaptive capacity. These lessons are directly applicable to the ongoing development of the UK Foresight Programme and the Government Foresight Function.

U.S. foresight practices also illustrate the connection between anticipatory analysis and policy implementation. The NIC's Strategic Futures Group, GAO's futures-oriented audits, and the EPA's integration of foresight into climate and energy policy provide concrete examples of how foresight can enhance decision-making, strategic planning, and resilience to uncertainty. By analysing these practices, the UK can explore ways to apply foresight systematically across departmental policies while maintaining overarching strategic coherence. The U.S. case demonstrates that agency-specific foresight complements centralised planning and contributes to a more nuanced understanding of the potential policy impacts arising from technological, environmental, and geopolitical changes.

In conclusion, the US serves as a highly instructive comparative case for the UK. Its decentralised, agency-specific foresight initiatives demonstrate how such approaches can coexist with broader government objectives. The contrast between the UK's centralised approach and the U.S.'s dispersed model illuminates the strengths and limitations of different institutional arrangements. By analysing the American experience, scholars and policymakers can identify ways to combine the advantages of centralised structures with the flexibility of decentralised approaches, thereby enhancing the effectiveness of the UK's strategic foresight framework. In this way, the U.S. example is not merely a point of comparison, but a source of practical insight for strengthening the UK Government's foresight programmes and improving its capacity to respond to future uncertainties.

4.6 Conclusion

The evolution of strategic foresight in the US reveals a complex and adaptive trajectory, shaped by shifting geopolitical, environmental, technological, and institutional imperatives. From its Cold War origins in national security planning to contemporary engagements with global risks such as climate change and systemic disruption, foresight has transitioned from a peripheral analytical tool to a more embedded, though fragmented, governance function.

During the Cold War, foresight was closely linked to survival strategies, including nuclear deterrence, crisis management, and space exploration. The Truman and Eisenhower administrations institutionalised foresight via the National Security Council and Project Solarium, while thinkers such as Herman Kahn and Olaf Helmer advanced scenario-based methods. The Kennedy era illustrated foresight's strategic utility in diplomacy and technological ambition, notably through the Apollo Program and the Cuban Missile Crisis.

The 1970s and 1980s saw foresight expand into environmental domains. The creation of the EPA and the passage of NEPA under President Nixon marked a growing recognition of ecological risks. President Carter's energy policies further elevated the role of foresight. However, the Reagan and George H. W. Bush administrations deprioritised environmental foresight in favour of market liberalisation and defence, despite limited international engagement (e.g., the Montreal Protocol). In the post-Cold War era, foresight became increasingly important amid global interdependence and policy complexity. Although Al Gore promoted anticipatory governance, institutionalisation at the executive level remained limited. The Obama administration made notable advances through the Clean Power Plan and embedded foresight in agencies like the EPA and DOE. Conversely, the Trump administration retreated from long-term strategic commitments, while the Biden administration has since re-centred foresight in climate and innovation agendas—albeit amid continued political and economic resistance.

Comparing institutional arrangements, the UK has developed a more centralised foresight model, integrating science and technology policy through bodies such as GO-Science and the Foresight Function. While this provides coherence and coordination, it has also revealed constraints—namely top-down rigidity, interdepartmental silos, and limited local adaptation.

In contrast, the US employs a decentralised model, where foresight functions are embedded within federal agencies. This structure fosters domain-specific expertise, experimentation, and responsiveness, supported by robust academic and private-sector networks. Agencies like the EPA, DOE, and DOD apply tailored foresight tools such as scenario planning and risk anticipation within their respective mandates.

Although the UK's centralised model has institutional strengths, it has struggled to address the multifaceted challenges of climate change, technological disruption, and geopolitical uncertainty. These conditions call for a more agile and balanced governance structure. The US

experience suggests that a decentralised, networked foresight system may offer greater flexibility and resilience. Accordingly, the UK should consider adopting a hybrid foresight architecture—combining strong central coordination with agency-level autonomy and local adaptability. Such a model would retain institutional coherence while enhancing strategic responsiveness, positioning the UK to more effectively navigate emerging futures.

Chapter 5. Theoretical Foundations: Strategic Foresight for Management & Executions

5.1 Introduction

This chapter establishes the theoretical foundations necessary for understanding the institutional evolution and policy application of strategic foresight. Importantly, the aim of this research is not merely to highlight the limitations of foresight techniques or tools within the policy process, but rather to conceptualise how foresight can be more effectively organised, operated, and managed within the context of strategic management in policy systems. Although existing studies on strategic foresight at the national level focus on maximising organisational capabilities and policy success within government agencies while minimising failure, research analysing the intersection of foresight-based policy processes and strategic management remains limited.

In doing so, the study seeks to differentiate itself from much of the existing literature. To this end, the chapter reviews complexity theory and Harold Lasswell's model as foundational concepts, as well as strategic management theory, before integrating them into a new analytical framework. This framework emphasises how foresight is connected to strategic planning and management, and its critical role in translating long-term insights into actionable outcomes.

Section 5.2 examines complexity theory, which conceptualises policymaking systems as complex adaptive systems. This approach highlights that the contemporary policy environment cannot be adequately explained through linear predictive models; rather, it exhibits interactive, non-linear, and adaptive characteristics. From this perspective, foresight should not be understood as a singular act of prediction but as a continuous and adaptive process embedded across governance structures. Section 5.3 applies strategic management theory to the organisation and governance of foresight. The focus here lies in understanding how efficient resource allocation, organisational capability building, and adaptive strategy formulation contribute to the design and operation of policy systems. In particular, the decentralised experience of the US government offers meaningful insights from a strategic management standpoint, providing comparative implications for addressing the limitations of the UK's more centralised governance framework. Section 5.4 revisits Harold Lasswell's decision process

theory, which encompasses the full cycle of policymaking—from problem identification to implementation and evaluation. This model shares notable structural similarities with the UK's ROAMEF framework and provides both historical and theoretical grounding for embedding foresight throughout the policy process. Section 5.5 compares Lasswell's legacy with the UK Futures Framework, analysing the theoretical foundations and institutional distinctions that underpin each approach. This comparison further explores how Lasswell's model of governance can be connected to contemporary adaptive policymaking systems, generating transformative insights for the evolution of the new UK policy framework. Finally, Section 5.6 builds on the preceding discussions to restructure the institutional foundations of the UK Futures Framework. This section synthesises complexity theory, strategic management theory, and Lasswell's decision process framework to propose a new strategic foresight mechanism that enhances adaptability and execution capacity within policymaking. Three interlinked pillars are introduced as the core elements of this mechanism: (1) Development and Operation Strategy, (2) Monitoring and Evaluation Strategy, and (3) Talent Development Strategy. Together, these pillars aim to strengthen the integration between theoretical insight and practical policy implementation, offering a coherent foundation for adaptive governance in the UK context.

In sum, Chapter 5 provides the theoretical basis that underpins the analytical framework of this study. It aims to elucidate, prior to subsequent comparative case analyses and the formulation of final policy recommendations, how strategic foresight is linked to strategic planning and management, playing a pivotal role in translating long-term policy insights into actionable outcomes.

5.2 Policymaking Systems are Complex Systems

Traditional policymaking models are often based on linear, rationalist assumptions that suggest a predictable, sequential process. However, such models increasingly fail to reflect the realities of modern governance, which is marked by complexity, uncertainty, and interdependence. In light of global crises such as climate change, pandemics, and geopolitical instability, the need for policy approaches that accommodate complexity and promote adaptability has become critical (Cairney, 2012; 2019; Geyer and Rihani, 2010). Cairney (2012), in *Understanding Public Policy*, critiques conventional models for overlooking the fragmented, uncertain, and politically contested nature of policymaking. He emphasises that policies emerge not from

ideal rational processes, but from bounded rationality, shifting institutional dynamics, and emotional and political interactions. This section builds on such critiques to argue that policy systems should be understood as complex adaptive systems, characterised by non-linear interactions, emergent outcomes, and constant feedback among diverse actors (Meadows, 2008; Duit and Galaz, 2008). Recognising this complexity has significant implications for more responsive and resilient policy design and implementation.

To structure this discussion, Section 5.2.1 argues that policymakers must accommodate complexity in practice and highlights the necessity of integrating complexity into policy process models. Subsequently, Section 5.2.2 identifies the essential enhancements required for the development of a novel analytical framework that internalises complexity.

5.2.1 The Imperative for Policymakers to Embrace Complexity in Practice

Cairney (2012; 2019) underscores that policy environments do not conform to controlled, linear paradigms but rather function as complex adaptive systems, shaped by a confluence of internal and external factors with numerous interacting components. Policy trajectories are rarely straightforward; instead, they evolve amidst competing interests, institutional constraints, resource limitations, and unforeseen external pressures. Neglecting this complexity heightens the likelihood of policy failure, inefficiency, or unsustainability (Geyer and Rihani, 2010).

Leveraging complexity enables policymakers to:

Anticipate unintended consequences and manage systemic risks more effectively. Policies often yield unforeseen outcomes due to cross-sector dynamics and feedback effects (Margetts and Dunleavy, 2013). A complexity-informed approach allows for the early identification of potential adverse externalities, facilitating the design of adaptive response mechanisms through ongoing evaluation. For instance, climate mitigation strategies aimed at reducing fossil fuel consumption may inadvertently exacerbate energy poverty among vulnerable populations. Recognising such dynamic relationships enables the integration of appropriate compensatory safeguards, supporting more equitable policy design.

Foster inclusive collaboration among heterogeneous stakeholders with diverse agendas. Complexity theory recognises policymaking as inherently pluralistic, encompassing government, private sector, civil society, and supranational actors (Klijn and Koppenjan, 2016).

Integrating complexity-oriented collaborative mechanisms, such as multi-stakeholder platforms, enhances the likelihood of deliberate inclusivity and consensus-based policy outcomes (Rodes, 1997).

Develop adaptive policies that respond to evolving evidence and novel circumstances. Traditional, static policy models must give way to dynamic, iterative approaches that are continuously revised in light of new empirical insights and social changes. Such adaptive orientation is particularly vital for addressing policy environments characterised by interlinked global challenges, including climate change, public health emergencies, and socio-economic inequalities (Cairney and Geyer, 2015).

Integrating complexity theory into models of the policy process enables both scholars and practitioners to develop more nuanced and empirically grounded frameworks that more accurately reflect the realities of contemporary policymaking (Bovens, 't Hart and Peters, 2001).

5.2.2 Key Enhancements Required for New Analytical Frameworks

Traditional models of the policy process, such as Harold Lasswell's seminal policy cycle discussed in subsequent chapters, provide a foundational framework for conceptualising the sequential progression of policy decision-making stages (Lasswell, 1956). Nevertheless, such models have been criticised for offering an overly reductionist depiction of the policy environment. Cairney (2012) argues that these linear frameworks fail to capture the dynamic and multifaceted nature of real-world policymaking. Moreover, Cairney (2012) raises an important question as to whether complexity theory serves as a rival to, or a complementary analytical lens for, traditional policy cycle models. Consequently, he contends that complexity theory and existing models should not be regarded as mutually exclusive paradigms, but rather as synergistic frameworks capable of jointly enhancing both the explanatory power and practical utility of policy analysis.

In order to address the inherent limitations of prevailing policy models, contemporary analytical frameworks must be reconfigured to incorporate a series of critical enhancements.

Firstly, systems thinking should be embedded at the core of policy analysis to reflect the interdependent nature of governance challenges and the systemic repercussions of policy

interventions (Meadows, 2008). Secondly, the integration of iterative feedback loops is essential for reinforcing mechanisms of monitoring, evaluation, and adaptive learning throughout the policy cycle (Head, 2008). Thirdly, scenario planning and foresight methodologies must be employed to enable policymakers to anticipate emergent risks and to design strategies that are robust under conditions of uncertainty (Schoemaker, 1995). Fourthly, the utilisation of real-time data through advanced analytics and digital platforms should be prioritised to foster more responsive and evidence-informed decision-making processes (Margetts and Dunleavy, 2013). Finally, cross-sectoral coordination is required to ensure coherent responses to complex policy issues, necessitating enhanced collaboration among government departments, agencies, and external stakeholders (Rhodes, 1997).

Together, these enhancements aim to equip policymakers with the capacity to navigate the multifaceted and dynamic nature of modern governance, while retaining the conceptual discipline and procedural clarity offered by traditional policy cycle models.

5.3 Strategic Management Perspectives on Institutionalising Foresight

Strategic management theory provides a valuable analytical framework for examining the institutional design and operational management of strategic foresight systems. Whereas existing discussions have predominantly focused on methodological techniques—such as scenario planning, horizon scanning, and portfolio analysis—this study emphasises how foresight becomes embedded within organisational structures, how resources and capabilities are mobilised, and how adaptation to environmental change is achieved. This perspective frames foresight not merely as a technical or analytical activity but as a strategic function, shaped by organisational priorities and governance choices, and oriented towards long-term sustainability, resilience, and adaptability (Grant, 2019; Johnson et al., 2020).

In particular, foresight programmes are expected to deliver not only short-term policy objectives but also long-term improvement and sustainability. Institutionalised foresight systems must therefore go beyond the mere repetition of prediction and analysis, incorporating changes in the policy environment, organisational learning, and empirical feedback to enable continuous refinement. In this context, strategic management theory offers a systematic lens for considering iterative learning, resource allocation, capability development, and adaptation

strategies in institutional design and operation, thereby supporting the sustained improvement and long-term effectiveness of foresight systems (Ansoff, 1984; Teece et al., 1997).

Strategic management theory is particularly relevant to foresight systems across three core dimensions. First, the allocation of financial, human, and informational resources is a decisive factor in ensuring that foresight activities are institutionalised rather than remaining as one-off projects (Andrews et al., 2017). Second, the development of organisational capabilities—including analytical capacity, interdepartmental collaboration, and feedback mechanisms—enhances the execution and adaptability of foresight, enabling experiential learning and strategic improvement (Teece et al., 1997; Langley, 1988). Third, environmental adaptation ensures that foresight remains viable in unpredictable contexts and facilitates alignment with policy, organisational, and societal demands (Mintzberg and Waters, 1985).

In other words, applying strategic management theory allows foresight to be understood not merely as a methodological technique, but as a strategic process that continuously learns and improves within organisations and policy systems. This perspective is essential for securing the sustainability and long-term enhancement of foresight systems, while simultaneously contributing to both policy effectiveness and organisational resilience.

5.3.1 Strategic Management Theory and the Institutionalisation of Foresight

The following sub-section categorises seven key strategic management and foresight approaches into three thematic domains—alignment and strategic fit, adaptive learning and transition, and participatory and design-oriented planning. This classification serves a crucial role in elucidating how foresight can be institutionalised and, in particular, in deriving lessons from the comparative policy context of the US and the UK.

A. Alignment and Strategic Fit

(1) Strategic Fit (Ansoff, 1984)

Strategic fit emphasises the alignment between an organisation's internal capabilities and external environmental conditions. In the context of foresight, it explains how foresight practices can be tailored to the specific mission of each policy domain. The decentralised U.S. model demonstrates strategic fit through agency-specific foresight: for instance, the USDA

conducts environmental horizon scanning, while the National Intelligence Council (NIC) performs geopolitical futures analysis. By contrast, the UK's centralised model achieves coordination and standardisation, yet risks insufficient responsiveness to the detailed context of individual sectors.

(2) Scenario Planning (Godet, 1987)

Scenario planning encourages organisations to explore multiple plausible futures, thereby avoiding strategic myopia. Institutionalising scenario planning ensures foresight becomes part of organisational learning and strategy formation rather than a one-off analytical exercise. RAND Corporation's defence scenario exercises during the 1940s–50s exemplify this approach. Strategically, scenario planning embeds foresight within a proactive exploratory strategy, enabling organisations to anticipate uncertainty and adapt decisions accordingly.

B. Adaptive Learning and Transition

(3) Transition Management Theory (Rotmans et al., 2001)

Transition management theory addresses long-term societal and technological transitions through coordinated, multi-level, and incremental policy interventions. Applied to foresight, it underscores that foresight outputs should be linked continuously to policy processes, not confined to episodic reports. For example, UK horizon scanning could be enhanced by aligning with long-term transition scenarios in areas such as climate change or digital transformation, thus contributing directly to systemic change.

(4) Strategic Agenda Management (Bryson et al., 1986)

Strategic agenda management highlights the proactive shaping, prioritisation, and coordination of policy agendas. For foresight to achieve institutional impact, outputs must inform national-level agenda-setting. In the U.S., defence and intelligence foresight are closely linked to strategic policy agendas, while in the UK, GO-Science outputs occasionally fail to influence Cabinet-level priorities, illustrating the importance of strategic alignment between foresight and policymaking.

(5) Strategic Learning and Planning (Langley, 1988)

Strategic learning theory posits that strategy formation is an iterative, reflective process. Foresight similarly benefits from incorporating lessons from predictive failures or overlooked

weak signals into institutional design. This process strengthens dynamic capabilities, enhancing the resilience and adaptability of foresight systems (Teece et al., 1997).

C. Participatory and Design-Oriented Planning

(6) Design Thinking / Future Design (Ackoff, 1981)

Future design treats foresight not merely as risk anticipation but as a co-creative process to construct desirable futures. It promotes creative problem structuring, experimental policy testing, and cross-sector collaboration. While UK foresight has primarily focused on risk assessment and policy uncertainty, the U.S. approach integrates innovative policy exploration, particularly in energy and environmental sectors.

(7) Participatory Strategic Planning (Langley, 1988)

Participatory planning ensures legitimacy, buy-in, and societal acceptance by involving diverse stakeholders. If foresight remains confined to internal expert groups, political sustainability and public support may be limited. The U.S. practice of involving expert networks and citizen panels exemplifies how participatory mechanisms can enhance institutional robustness—a lesson the UK can draw upon.

These seven frameworks collectively illustrate why strategic management theory is critical for institutionalising foresight. Strategic fit ensures alignment between organisational capabilities and environmental demands; scenario planning, transition management, strategic learning, and agenda management facilitate adaptive learning, continuous improvement, and integration with policy cycles; and design thinking and participatory planning enhance creativity, stakeholder engagement, and legitimacy.

By classifying these approaches into thematic categories, this section clarifies how foresight can evolve from technical exercises into sustained strategic functions, guiding institutional design, resource allocation, capability development, and adaptive governance. This comprehensive perspective enables comparative insights, demonstrating how the U.S. decentralised model may inform improvements to the UK's centralised foresight structures while preserving long-term sustainability and effectiveness.

5.3.2 Comparative Implications: The United States and the United Kingdom

The US's decentralised foresight model has been institutionalised across multiple policy domains and agencies, reflecting strategic fit and learning- and experimentation-oriented characteristics (Ansoff, 1984; Teece et al., 1997). For instance, the US Department of Agriculture (USDA) conducts horizon scanning specifically focused on long-term environmental risks and the transition to clean energy, while analyses by the National Intelligence Council (NIC) support strategic decision-making regarding geopolitical and security futures. This decentralised approach not only reflects the unique roles and expertise of individual agencies, but also promotes integrated learning across the government system through inter-agency feedback and learning mechanisms (Mintzberg and Waters, 1985; Langley, 1988). Moreover, structuring agency-specific foresight activities as a portfolio allows for the diversification of policy risk and facilitates experimental policy initiatives and participatory strategic planning, thereby enhancing institutional resilience and adaptability (Bryson et al., 1986; Rotmans et al., 2001; Godet, 1987; Teece et al., 1997; Ackoff, 1981).

By contrast, the UK's centralised foresight model, centred on the Government Office for Science (GO-Science) and the UK Government Foresight Function, emphasises policy agenda-setting, interdepartmental coordination, standardisation, and strategic consistency (Gowing and Langdon, 2023; European Commission, 2016). While this centralised model provides clear strategic direction and integrates foresight activities across government, it exhibits limitations in delivering detailed, sector-specific responsiveness, flexibility, and mission-oriented practical implementation (Langley, 1988; Ackoff, 1981).

A key lesson that the UK can draw from the US approach is that the design and operation of foresight mechanisms are not merely methodological matters, but are closely connected to strategic management choices (Grant, 2019; Johnson, Scholes and Whittington, 2020). The efficiency and sustainability of foresight activities are directly linked to strategic management elements, such as the allocation of resources, capability development, and strategies for responding to environmental change. The US decentralised model enables agencies to conduct independent foresight activities while fostering portfolio diversification, strategic learning, experimental policy initiatives, and participatory strategic planning, thereby providing a structure that supports adaptation to policy uncertainty (Bryson et al., 1986; Rotmans et al., 2001; Godet, 1987). In addition, the institutionalisation of mission-oriented practices within each agency allows long-term policy objectives to be pursued consistently and shields foresight activities from short-term political or economic pressures (Mintzberg and Waters, 1985; Langley, 1988).

While the UK's centralised model secures strategic integration, agenda coordination, and policy standardisation, it is less effective in promoting mission-oriented practices and in quickly translating sector-specific predictive failures or uncertainties into policy action. Thus, comparing the two models underscores the critical importance of strategic management choices for the success and sustainability of foresight systems, as well as the impact of balancing centralisation and decentralisation on policy effectiveness (Ansoff, 1984; Ackoff, 1981; Godet, 1987; Bryson et al., 1986; Rotmans et al., 2001).

In conclusion, strategic management theory provides a robust analytical framework for embedding foresight as a strategic function within organisations, rather than merely as a predictive tool. Concepts such as strategic fit, scenario planning, transition management, agenda management, strategic learning, design thinking, and participatory planning each contribute directly to institutional alignment, exploratory learning, long-term transition integration, political embedding, resilience, creative future design, and legitimacy and inclusiveness. Collectively, they enhance both institutional sustainability and policy effectiveness.

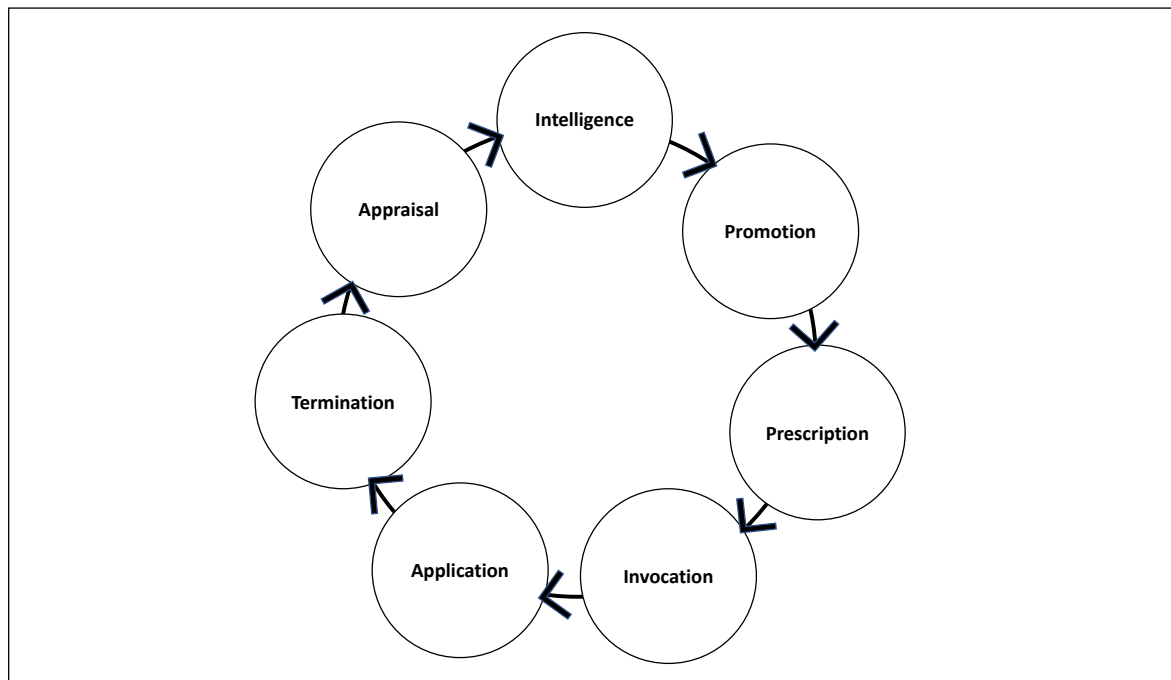
5.4 Revisiting Lasswell's Decision Process Legacy

This section revisits the intellectual legacy of Harold D. Lasswell, whose decision process model provided one of the earliest systematic frameworks for understanding policy formulation and implementation. It examines both the enduring theoretical significance and the recognised limitations of his approach, while tracing the development of alternative or complementary conceptual extensions. Section 5.3.1 introduces Lasswell's seven functional categories, positioning them as a foundational attempt to analytically structure the policymaking process. Section 5.3.2 reflects on Lasswell's broader contribution to the institutionalisation of policy sciences and the advancement of interdisciplinary inquiry. Finally, Section 5.3.3 offers a critical evaluation of the decision process model, assessing its contemporary relevance and exploring the extent to which its core principles remain applicable within today's increasingly complex policy environments.

5.4.1 Lasswell's (1956) Seven Functional Categories of Decision-Making

Harold D. Lasswell's decision process model delineates seven distinct but interconnected functional stages in the policy process. These categories—originally formulated in 1956—constitute a systematic framework for understanding how public policies are conceived, legitimised, operationalised, and evaluated (Lasswell, 1956; deLeon, 2006).

1. Intelligence – the systematic gathering and interpretation of information relevant to a public issue, drawing on sources such as statistical data, expert consultation, and stakeholder input to define the scope, urgency, and potential direction of the policy challenge (Parsons, 1995).
2. Promotion – the articulation and advocacy of competing policy narratives and options. This phase often includes lobbying, public campaigning, and agenda-setting activities by both state and non-state actors.
3. Prescription – the formal drafting of policy instruments and regulatory structures. It involves transforming preferred solutions into coherent legal and administrative texts.
4. Invocation – the official adoption or authorisation of policy through legislative or executive action. This confers institutional legitimacy and legal enforceability.
5. Application – the administrative implementation of policies by government agencies, often involving service delivery, regulation, and compliance monitoring. The effectiveness of this stage depends on institutional capacity and inter-agency coordination (Hill and Hupe, 2009; Hill and Varone, 2017).
6. Termination – the discontinuation or repeal of policies that have become obsolete, counterproductive, or misaligned with emerging priorities.
7. Appraisal – the systematic evaluation of policy performance and impact. This may include monitoring and evaluation (M&E) frameworks, impact assessments, or participatory feedback mechanisms (Vedung, 1997).



[Figure 3] Harold Lasswell's Seven Stages of the Policy-Making Process (1956)

Collectively, these functions outline a policy cycle that is both rational and iterative. While originally presented as a linear sequence, subsequent scholarship has emphasised the non-linear and dynamic character of real-world policymaking (Howlett et al., 2009). In this regard, Lasswell's model has served not only as a pedagogical tool but also as a foundational reference for further theoretical development in policy sciences (Dror, 1968; Fischer, 2003).

Despite critiques of its simplicity, the model remains instructive for both analysts and practitioners, especially when applied with recognition of feedback loops, contextual variations, and the complex interplay among actors. It has also been particularly influential in institutionalising policy analysis as a formalised and professionalised field of practice.

5.4.2 Lasswell's Contribution to Policy Sciences and Its Positive Impact

Harold D. Lasswell is widely recognised as one of the founding figures of the policy sciences, having laid the conceptual and normative foundations upon which much of the discipline has been constructed. In his seminal articulation of the "policy orientation" (Lasswell, 1951), Lasswell advanced a vision of policy analysis as both problem-oriented and explicitly value-driven—one that aspires not merely to technical efficiency but to the advancement of human dignity. This approach represented a paradigmatic shift away from traditional, positivist

models of political analysis, foregrounding the ethical and democratic imperatives underpinning public decision-making.

A central aspect of Lasswell's intellectual legacy lies in his effort to render the policy process analytically tractable by disaggregating it into a series of discrete yet interconnected functions. His model of the seven functional categories of decision-making remains a touchstone in policy studies, providing an enduring framework for understanding the cyclical, iterative nature of policy formulation, implementation, and appraisal (Parsons, 1995; Dye, 2016). The model offered one of the earliest attempts to systematically capture the temporal and procedural dynamics of governance and continues to inform both theoretical inquiry and applied policy design.

Equally influential is Lasswell's call for a normative policy science—one that does not eschew values in pursuit of analytical detachment but rather embraces them as integral to the formulation of just and effective policies. He insisted that policy analysis should be judged not only on the basis of its empirical validity but also its social relevance and normative legitimacy (Fischer, 2003). In so doing, Lasswell prefigured many of the contemporary debates about deliberative democracy, stakeholder engagement, and evidence-informed policymaking.

Furthermore, Lasswell championed interdisciplinarity as an essential methodological posture for the policy sciences. Rejecting disciplinary silos, he advocated for the integration of insights from political science, economics, sociology, psychology, law, and other fields. This commitment to analytical pluralism laid the groundwork for the policy sciences as a transdisciplinary enterprise, capable of addressing complex public problems in a holistic manner (Hoppe, 1999; Weimer and Vining, 2017).

Collectively, Lasswell's contributions continue to serve as a cornerstone of the policy sciences. His work offers not only a conceptual apparatus for examining the mechanics of policymaking but also a broader vision of what policy analysis ought to achieve. In today's governance contexts—marked by complexity, uncertainty, and normative contestation—Lasswell's insights remain profoundly relevant, reaffirming the need for a policy science that is both empirically grounded and ethically conscious.

5.4.3 Evaluating Lasswell's Decision Process: Extensions, Critiques, and Alternative Approaches

This section offers a critical evaluation of Lasswell's decision process model by exploring both its theoretical refinements and the major critiques it has attracted, thereby situating his foundational framework within the broader evolution of contemporary policy analysis.

A. Extensions and Refinements of Lasswell's Model

While Harold Lasswell's seven-stage decision process has long served as a foundational framework in policy studies, subsequent scholars have significantly refined and extended this model to reflect the increasing complexity and non-linearity of contemporary policymaking. These contributions situate Lasswell's work within a more dynamic and empirically nuanced context, expanding both its analytical and practical relevance.

Sabatier and Jenkins-Smith's Advocacy Coalition Framework (1993) reconceptualised policymaking as a long-term, belief-driven process shaped by coalitions of actors operating within policy subsystems. Their model departs from Lasswell's sequential logic by emphasising normative commitments and policy learning over time. Similarly, Kingdon's Multiple Streams Framework (1984) challenges the assumption of rational progression, suggesting that policy change occurs through the convergence of three independent streams—problems, policies, and politics—under conditions of temporal alignment. This model underscores the contingent, often unpredictable, nature of decision-making.

Baumgartner and Jones (1993), through Punctuated Equilibrium Theory, introduced the notion of policy stasis interrupted by rapid shifts, driven by institutional constraints and shifts in attention. Jones (1994) further highlighted bounded rationality as a defining condition of democratic decision-making, drawing attention to cognitive and institutional limitations.

Howlett, Ramesh and Perl (2009) proposed an updated interpretation of the policy cycle, recognising it as neither strictly linear nor universally applicable. Their model integrates contemporary governance realities—such as multi-level authority, diverse policy tools, and actor heterogeneity—within a more adaptive analytical structure.

Complementing these approaches, Ostrom (2005) underscored the role of institutional arrangements in shaping collective action. Her Institutional Analysis and Development framework foregrounds the importance of formal and informal rules in conditioning decision-making environments. Similarly, Mahoney and Thelen (2010) argued that institutional change is not always gradual but often driven by strategic agency and contestation, shaped by ambiguity and power asymmetries.

Collectively, these theoretical refinements transcend mechanistic models by foregrounding the interplay between structure, agency, and contingency. They reposition Lasswell's original framework as a valuable conceptual anchor within a broader, evolving discourse on policy complexity, institutional change, and strategic governance.

B. Critiques and Alternative Approaches to Lasswell's Model

Despite its foundational role in policy sciences, Lasswell's decision process model has been extensively critiqued for its rationalist, linear assumptions. Lindblom's (1959) theory of Incrementalism rejected the idea of comprehensive rationality, arguing instead that policy evolves through small, pragmatic adjustments shaped by bounded rationality and institutional inertia. Similarly, Dror (1968) advanced meta-policy making, stressing the importance of continually reflecting upon and revising the policymaking process itself to address complexity and uncertainty.

Jenkins-Smith and Sabatier's (1993) Advocacy Coalition Framework (ACF) further challenged Lasswell's sequentialism by focusing on ideologically driven coalitions competing over extended periods within policy subsystems. Rather than linear progression, the ACF views policy change as emerging from shifts in coalition dominance. Other models have introduced systemic and ecological perspectives. McGinnis and Ostrom's (2014) Social-Ecological Systems Framework highlights the role of polycentric governance and multi-level interactions, revealing the limitations of state-centric, stepwise models. Howlett, Ramesh, and Perl (2009) likewise critique the oversimplification of policy cycles, arguing for recursive, overlapping processes influenced by diverse institutional settings and feedback loops. Power dynamics form another axis of critique. Bachrach and Baratz (1962) exposed how elite actors shape not just decisions but non-decisions, drawing attention to structural exclusions that Lasswell's model overlooks. Similarly, the Garbage Can Model (Cohen, March, and Olsen, 1972) portrays

decision-making as chaotic and opportunistic, driven by loosely coupled streams of problems, solutions, and actors. Finally, Dye (2013) noted that while Lasswell's model has heuristic value, it fails to capture the political, economic, and bureaucratic realities that define actual policymaking.

Together, these critiques highlight the need to move beyond mechanistic models towards approaches that reflect the ambiguity, conflict, and institutional complexity inherent in real-world governance.

5.5 Comparing Lasswell's Legacy and UK Futures Framework

This section compares Harold Lasswell's classical model of policy decision-making with the UK Government's contemporary Strategic Foresight Framework, so-called the UK Futures Framework, highlighting both structural continuities and conceptual divergences. In doing so, it examines how Lasswell's intellectual legacy may be reinterpreted and integrated into modern policy design and futures-oriented governance.

5.5.1 Rationale for Comparing Lasswell and UK Futures Framework

Harold D. Lasswell's functional model of the policy process represents a classical approach that systematically structures policy development into a series of functional categories, offering a foundational analytical framework for the field. Owing to its conceptual clarity and applicability, it continues to serve as a theoretical cornerstone for policy design. The seven-stage sequence—from intelligence to appraisal—has been widely recognised as a rational and normative template for structuring policy formulation and implementation (Lasswell, 1956; Parsons, 1995), and is often regarded as a prototype of policy science, which aims to integrate normative intent with analytical practice.

By contrast, the UK Futures Framework, introduced by the British government in the 21st century, was designed as a strategic foresight mechanism to respond more proactively to increasingly complex and unpredictable policy environments. It refines the traditional ROAMEF model by integrating evaluation and feedback into a more flexible and cyclical policy structure (GO-Science, 2017). While this enables a more effective incorporation of

policy outcomes into continuous improvement processes and has seen gradual uptake across various government bodies, challenges remain in institutionalising scenario-based design, cross-departmental integration, and implementation capabilities (OECD, 2020).

Notably, Lasswell's model conceptualises policy within its broader socio-political context, placing institutional power dynamics, political conflict, and societal values at the centre of analysis. In contrast, the UK Futures Framework adopts a procedural and evaluation-oriented approach, emphasising structured and outcome-driven design. This divergence raises important methodological considerations regarding the integration of qualitative and quantitative evaluation methods and the balance between agility and deliberation in governance. In the face of mounting uncertainty and the growing need for iterative policy learning, there is an increasing call for a hybrid model that synthesises Lasswell's normative insights with the technocratic precision of the UK Futures Framework.

Moreover, although the ROAMEF model underlying the UK Futures Framework has become a widely accepted standard for policy design and evaluation within the UK (HM Treasury, 2022), there is a striking absence of systematic scholarship directly comparing it to Lasswell's policy cycle. This reveals a significant gap in the literature concerning the theoretical complementarity and practical tensions between classical policy science and contemporary foresight-oriented policy instruments. A rigorous comparative analysis of these two frameworks thus offers a valuable opportunity to explore how Lasswell's emphasis on political and social context may enhance the empirical robustness of the UK Futures Framework and ROAMEF, ultimately contributing to the integrated advancement of both policy theory and practice.

5.5.2 Connecting Lasswell's Legacy to the UK Futures Framework

Harold D. Lasswell's functional policy cycle offered a classical, staged model of policymaking—from intelligence gathering to appraisal—grounded in rational analysis. Celebrated for its conceptual clarity and structural coherence, it has served as a foundational reference in policy theory (Lasswell, 1956; Parsons, 1995). In contrast, the UK Futures Framework, developed in the 21st century to address increasingly complex and uncertain policy environments, moves beyond the linear logic of models such as ROAMEF. It emphasises flexibility, adaptability, and iterative feedback as core design principles (GO-

Science, 2017). Nevertheless, Lasswell's emphasis on functional integration continues to provide valuable methodological scaffolding for refining foresight-based governance models.

The theoretical convergence between Lasswell's legacy and the UK Futures Framework is supported by a range of contemporary policy theories. Sabatier and Jenkins-Smith's Advocacy Coalition Framework (1993) redefines policy change as a long-term, belief-driven process, underscoring the importance of interdepartmental learning—an idea central to the UK Futures Framework. Likewise, Baumgartner and Jones' Punctuated Equilibrium Theory (1993) highlights the dual dynamics of incremental continuity and sudden disruption, offering insights into the responsiveness required in foresight systems.

Mahoney and Thelen's (2010) theory of institutional change focuses on how gradual transformation is shaped by structural rigidity and power asymmetries—critical for embedding foresight within entrenched bureaucracies. Kingdon's Multiple Streams Framework (1984) explains agenda-setting through the alignment of problems, policies, and politics, underlining the importance of timing and contextual sensitivity. McGinnis and Ostrom's Social-Ecological Systems Framework (2014) offers a systems-level rationale for cross-sectoral foresight, emphasising multi-actor and multi-level interactions.

Howlett, Ramesh, and Perl's (2009) feedback-oriented policy cycle critiques linear models and supports the recursive design of the UK Futures Framework. Similarly, Dror's (1968) meta-policy theory shifts attention from outputs to the governance structures shaping policy design—an essential lens for strategic foresight. Lindblom's incrementalism (1959) highlights pragmatic adaptation under bounded rationality, while Cohen, March, and Olsen's Garbage Can Model (1972) legitimises adaptive and experimental decision-making under uncertainty.

Each theory contributes to different stages of the policy process: Kingdon's MSF enriches agenda-setting; ACF and PET deepen policy formulation; institutional change theory, SES, and incrementalism illuminate implementation and structural constraints; while feedback theory, meta-policy, and the Garbage Can Model inform evaluation and learning. Collectively, they offer a comprehensive foundation for bridging the normative clarity of Lasswell's model with the adaptive ethos of the UK Futures Framework.

5.6 Structuring the New Mechanistic Foundation for the UK Futures Framework

This section proposes a restructured and mechanistically grounded foundation for the UK Futures Framework, aimed at enhancing its institutional coherence and operational effectiveness within an increasingly complex and uncertain policy environment.

5.6.1 Designing New Strategy for Mission Implementation & Support, Evaluation, and Talent Development

Traditionally, Harold Lasswell conceptualised the policy-making process as a linear sequence comprising information gathering, problem definition, goal setting, policy design, implementation, evaluation, and feedback. This model represented an initial attempt to systematise policy analysis and formulation. However, the contemporary policy environment is characterised by a far more complex and fluid set of dynamics. The presence of multiple actors, non-linear information flows, institutional constraints, and unpredictable political contexts have transformed policymaking into a non-linear, adaptive, and dynamic process.

In response to these challenges, subsequent scholarly efforts have sought to augment Lasswell's static framework by incorporating insights from complexity theory, network governance, and advocacy coalition frameworks. These approaches reinterpret the reality of policy-making as inherently emergent and situated within pluralistic and decentralised systems.

This study does not merely inherit Lasswell's classical model of the policy process, but rather aims to reconstruct it through the integrative lens of contemporary policy and strategic management theories, thereby providing both theoretical grounding and practical applicability. Using the UK Government's strategic foresight programme under the Department for Science, Innovation and Technology (DSIT)—specifically the foresight programme of GO-Science—as the empirical focal point. Through this analysis, the study seeks to propose a new governance mechanism capable of enabling more adaptive and coherent decision-making in policy environments characterised by heightened complexity and uncertainty. In pursuit of this objective, three interrelated mechanisms—(1) Development and Operation Strategy, (2) Monitoring and Evaluation Strategy, and (3) Talent Development Strategy—are deliberately positioned as foundational pillars within the framework.

The reason for structuring the framework around these three pillars derives from both strategic management principles and lessons from the institutional practices observed in the US. From a strategic management perspective, sustainable organisational performance depends on the integration of strategy formulation, implementation, evaluation, and capacity development as mutually reinforcing processes (Kaplan and Norton, 2001; Mintzberg, 1994). Within complex policy environments, this means that foresight cannot remain confined to anticipatory analysis alone; rather, it must be embedded in a continuous cycle of strategic execution, learning, and human capability enhancement. Accordingly, the three mechanisms—Mission Implementation & Support, Evaluation, and Talent Development—represent the operational dimensions through which strategic foresight can be institutionalised as a living management process rather than a static forecasting exercise.

In parallel, the structure mirrors key features of the US’s strategic management framework in public administration, where foresight has increasingly been integrated into mission-oriented governance. The U.S. model emphasises aligning foresight activities with programme implementation and performance evaluation, as evident in initiatives under the Government Performance and Results Act (GPRA) and the subsequent Evidence Act (U.S. Office of Management and Budget, 2019). These frameworks highlight how foresight-driven missions require institutional support mechanisms, systematic evaluation, and the continuous cultivation of analytical and leadership talent to ensure adaptive learning across government.

By adopting and contextualising these strategic management insights, the proposed UK framework seeks to translate foresight into a practical governance mechanism—one that not only informs long-term vision but also sustains mission delivery, embeds feedback through evaluation, and builds institutional resilience through talent development. This tripartite structure, therefore, reflects a deliberate synthesis of foresight, management, and institutional learning to enable more coherent and adaptive policy implementation under conditions of complexity and uncertainty.

5.6.2 Linking the Complexity and Laswell’s Legacy

Harold D. Lasswell’s (1951) influential model of the policy process—comprising seven sequential stages from intelligence gathering to feedback—was foundational in establishing policy sciences. While it offered analytical clarity in its time, its linear and rationalist assumptions are increasingly misaligned with contemporary governance, characterised by

complexity, uncertainty, and emergent change. Modern policy systems function more accurately as Complex Adaptive Systems, defined by distributed agency, feedback sensitivity, co-evolution, and non-linearity (Cairney, 2012; 2019; Geyer and Rihani, 2010). In such systems, outcomes emerge from dynamic interactions among diverse actors and institutional settings. To remain relevant, the Lasswellian model must be reinterpreted through the lens of complexity theory.

To this end, several theoretical advancements provide complementary perspectives. The Advocacy Coalition Framework (Sabatier and Jenkins-Smith, 1993) introduces a non-linear conception of policy change, driven by ideologically anchored coalitions operating over long time horizons—an interpretation that aligns with the adaptive and collaborative governance ethos of the UK Futures Framework. The Multiple Streams Framework (Kingdon, 1984) conceptualises decision-making as the confluence of problem, policy, and political streams under contingent conditions, reinforcing the importance of synchrony and system receptivity in agenda-setting and strategic intervention.

The Punctuated Equilibrium Theory (Baumgartner and Jones, 1993) further complicates linear models by demonstrating how stable policy periods are punctuated by abrupt shifts resulting from institutional friction or shifts in public attention—features of complex systems with path dependency and tipping points. The Social-Ecological Systems Framework (McGinnis and Ostrom, 2014) extends this logic to multi-level governance, explicitly incorporating ecological feedback loops and cross-scale interactions into system design and resilience planning.

Moreover, the Garbage Can Model (Cohen, March and Olsen, 1972) provides a post-rationalist perspective on decision-making, portraying organisations as loosely coupled entities where solutions, problems, and participants interact unpredictably. Lindblom's (1959) Incrementalism reinforces the plausibility of "muddling through" strategies under bounded rationality—particularly useful in institutional contexts with high complexity and low informational clarity. Both models suggest the importance of adaptive governance mechanisms that are tolerant of ambiguity, error, and iteration.

Importantly, Dror's (1968) Meta-Policy Making further argues for redesigning not only policy content but also cognitive and procedural frameworks, aligning with complexity-informed principles such as reflexivity, learning, and second-order thinking.

To synthesise these diverse perspectives, this study employs Knight's (1921) Theory of Uncertainty as a transversal analytical axis. Knight's distinction between measurable risk and fundamental uncertainty provides a theoretical justification for embedding flexibility, redundancy, and scenario responsiveness within each of the three core mechanisms—namely, Development and Operation, Monitoring and Evaluation, and Talent Development Strategies.

Finally, Systems Thinking (Meadows, 2008) and Transition Management (Rotmans et al., 2001) offer practical guidance for governing structural change. These approaches prioritise feedback loops, participatory foresight, and multi-actor engagement—essential tools for policymaking in complex environments.

In sum, reinterpreting Lasswell's legacy through complexity theory underscores the need for a governance model grounded not in linear control, but in systemic responsiveness, institutional adaptability, and epistemic diversity—core principles for building future-ready foresight systems in the UK.

5.6.3 Linking the Strategic Management

Policy decision theory and strategic management stem from distinct intellectual traditions. Policy studies have traditionally emphasised rational analysis, institutional mechanisms, and actor interaction in the public sphere—exemplified by Lasswell's (1951) seven-stage model of the policy process. This linear framework, encompassing problem identification through to evaluation and feedback, has long served as a template for policy design. Yet, in practice, governance often unfolds in contexts of uncertainty and complexity, exposing the limitations of such prescriptive models.

In response, post-Lasswellian theories have reconceptualised policymaking as dynamic and adaptive. The Advocacy Coalition Framework (Sabatier and Jenkins-Smith, 1993) highlights belief-driven learning within policy subsystems. Kingdon's (1984) Multiple Streams Framework captures the contingent convergence of problems, policies, and politics, while Punctuated Equilibrium Theory (Baumgartner and Jones, 1993) shows how incrementalism can be disrupted by sudden shifts. Ostrom's (2005) Institutional Analysis and Development framework further situates policy within polycentric, evolving systems.

Strategic management theory, although rooted in private-sector contexts, has gained relevance in public administration. Thinkers such as Ackoff (1981), Ansoff (1965, 1984), and Godet (1987) have advanced foresight-based approaches applicable to public governance. Ackoff framed strategy as the design of preferable futures; Ansoff's "strategic fit" model stressed alignment between environmental turbulence and institutional capacity; and Godet's scenario planning advocated engaging with multiple plausible futures. These insights reposition public policy not as a reactive artefact but as an instrument of deliberate and strategic future-making.

Notwithstanding their theoretical value, the direct application of private-sector strategic models to the public realm is not without contention. Unlike corporations, public organisations operate under democratic accountability, normative pluralism, and multidimensional mandates (Bryson et al., 2018). Thus, any transposition of strategic thinking into public policy must be critically adapted to these institutional constraints.

5.6.4 Convergence of Theories of Policy decision-making and Strategic Management

The systematic analytical frameworks derived from Lasswell's theory of policy decision-making, when combined with the practical planning capabilities of strategic management theory, serve as mutually reinforcing assets. Together, they enhance both the formal validity and the operational feasibility of policy design.

Historically, these two disciplines have evolved along distinct epistemological trajectories. Policy studies are grounded in public institutions and social values, whereas strategic management has traditionally been shaped by private-sector logics of optimisation and efficiency. However, in an era marked by increasing complexity and uncertainty in governance, the integration of these domains is no longer optional but a strategic imperative (Ackoff, 1981; Ansoff, 1984; Parsons, 1995).

This imperative is particularly salient for governments facing the dual demands of forward-looking planning and operational agility, alongside the capacity for adaptive learning. Mintzberg's (1994) concept of emergent strategy resonates strongly with such contexts, describing how formal plans are often supplanted by iterative feedback and collective meaning-making processes in real-world policy formation.

Accordingly, this section provides the theoretical foundations for the design of three strategic mechanisms proposed in this study. By synthesising the structural clarity of policy theory with the anticipatory and action-oriented nature of strategic management, the study seeks to develop a hybrid framework that supports anticipatory, adaptive, and mission-driven governance.

This theoretical integration is operationalised through three interlinked mechanisms, designed to be applicable within the UK Government's strategic foresight initiative led by the GO-Science:

- (1) Development and Operation Strategy,
- (2) Monitoring and Evaluation Strategy, and
- (3) Talent Development Strategy.

Each mechanism is designed through the integration of insights from policy decision theory and strategic planning, with the aim of establishing an anticipatory, adaptive, and institutionally embedded foresight system within the UK Government.

1. Development and Operation Strategy

Building on the theoretical integration of policy and strategy, the Development and Operation Strategy serves as the structural foundation for a foresight-oriented governance model. It seeks to organise public policy planning and implementation by drawing on key insights from both policy decision theories and strategic management frameworks.

From a policy theory perspective, this mechanism incorporates the Advocacy Coalition Framework (Sabatier and Jenkins-Smith, 1993), Punctuated Equilibrium Theory (True, Jones and Baumgartner, 2007; Baumgartner and Jones, 1993; 2009), and Institutional Change Theory (Mahoney and Thelen, 2010). The Advocacy Coalition Framework explains long-term policy evolution through competition and cooperation among belief-based coalitions, informing the design of collaborative foresight networks. Punctuated Equilibrium Theory highlights the coexistence of incremental change and abrupt shifts, stressing the need for institutional agility. Institutional Change Theory adds depth by illustrating how ambiguity and power dynamics shape the evolution of formal and informal policy rules.

From strategic management, Ansoff's (1984) concept of strategic fit emphasises aligning external change with internal capacity, supporting adaptive institutional design. Godet's (1987)

scenario planning introduces tools for preparing for multiple plausible futures, particularly under uncertainty. Transition Management Theory (Rotmans et al., 2001) complements this by providing a phased approach to long-term systemic transformation aligned with sustainability goals.

Together, these theories enable a shift from static and linear models of policy implementation toward adaptive governance structures that are capable of anticipating, coordinating, and operationalising change in complex and non-linear environments.

2. Monitoring and Evaluation Strategy

As the second core mechanism, the Monitoring and Evaluation Strategy addresses the need for multilayered analysis of policy acceptance, implementation fidelity, and performance within complex governance systems. Building on the convergence of policy decision-making and strategic management, this mechanism introduces an evaluative infrastructure suited to dynamic and uncertain policy environments.

From a policy theory perspective, it draws on the Multiple Streams Framework (Kingdon, 1984), the Social-Ecological Systems (SES) Framework (McGinnis and Ostrom, 2014), and Policy Cycles and Feedback Theory (Howlett, Ramesh and Perl, 2009). The Multiple Streams Framework conceptualises policy outcomes as contingent on the alignment of problems, proposals, and political conditions—useful for evaluating timing and responsiveness. The SES Framework broadens the evaluative lens to include institutional, actor-based, and ecological interactions, enabling assessment of systemic complexity. Policy Cycles and Feedback Theory reconceives evaluation as iterative and reflexive, fostering continuous learning through multi-loop feedback.

From a strategic management standpoint, this mechanism incorporates Bryson, Freeman, and Roering's (1986) strategic agenda management, aligning goals with actions while enabling responsiveness to shifting contexts. Langley's (1988) planning-learning model positions evaluation as a driver of organisational learning and strategic renewal. Complementing this, Knight's (1921) distinction between risk and uncertainty reinforces the need for evaluative systems that are both flexible and resilient to shocks.

Together, these insights contribute to the design of a monitoring and evaluation architecture that is not only methodologically robust but also strategically agile—capable of guiding continuous adaptation and foresight-driven recalibration in the face of policy complexity.

3. Talent Development Strategy

The third strategic mechanism—Talent Development Strategy—addresses the essential need to build human and organisational capabilities for effective foresight implementation. As foresight initiatives increasingly operate in volatile and ambiguous policy environments, developing cognitive, analytical, and adaptive competencies among public sector professionals becomes vital to institutional resilience.

This mechanism draws on policy theories that highlight the reflexive, experiential, and often non-linear nature of policy learning. Dror's (1968) Meta-Policy Making framework emphasises second-order thinking—encouraging both innovation in policy content and critical reflection on policy processes. This meta-cognitive orientation is crucial for institutionalising foresight capabilities.

Lindblom's (1959) Incrementalism suggests that in uncertain, information-scarce environments, pragmatic, trial-and-error learning is often more effective than optimal design. Similarly, the Garbage Can Model (Cohen, March and Olsen, 1972) frames decision-making as a fluid interaction of problems, solutions, participants, and opportunities—reinforcing the need for flexibility and intuitive judgement in complex settings.

From a strategic management perspective, Ackoff's (1981) future-oriented planning calls for the creative capacity to invent rather than merely anticipate the future, positioning public servants as active agents of change. Langley's (1988) participatory strategy model promotes inclusive, dialogic processes that support collective ownership of goals. Bennis and Nanus's (1985) strategic leadership model highlights the importance of vision, integrity, and mobilisation in navigating transformation. Finally, the Narrative Policy Framework (Jones and McBeth, 2010) underscores the role of storytelling and communication in building legitimacy, suggesting that narrative competence is key to stakeholder engagement and policy acceptance.

In sum, this mechanism advances a comprehensive model of talent development that integrates reflexivity, adaptability, creativity, and communicative competence—core attributes necessary

for embedding foresight into public sector governance and sustaining it in the face of uncertainty.

Collectively, these three mechanisms offer a coherent structure for operationalising strategic foresight in government. Beyond combining policy and strategy as academic constructs, this convergence articulates a governance capability equipped for long-term uncertainty, continuous feedback, and human-centred transformation. The integration of Uncertainty Theory (Knight, 1921), Complexity Theory (Meadows, 2008), and Systems Thinking further enables the embedding of resilience and adaptability as transversal principles across all strategic components. This synthesis thus provides a practice-oriented blueprint for anticipatory policy systems, with direct implications for the structural evolution of GO-Science and comparable institutions.

Mechanism	Theory	Theoretical Concept
Mission Operation and Support Strategy	Policy Decision-Making	Advocacy Coalition Framework (Sabatier & Jenkins-Smith, 1993)
	Policy Decision-Making	Punctuated Equilibrium Theory (Baumgartner & Jones, 1993)
	Policy Decision-Making	Institutional Change Theory (Mahoney & Thelen, 2010)
	Strategic Management	Strategic Fit (Ansoff, 1984)
	Strategic Management	Scenario Planning (Godet, 1987)
	Strategic Management	Transition Management Theory (Rotmans et al., 2001)
Monitoring and Evaluation Strategy	Policy Decision-Making	Multiple Streams Framework (Kingdon, 1984)
	Policy Decision-Making	Social-Ecological Systems Framework (McGinnis & Ostrom, 2014)
	Policy Decision-Making	Policy Cycles and Feedback (Howlett, Ramesh & Perl, 2009)
	Strategic Management	Strategic Agenda Management (Bryson et al., 1986)
	Strategic Management	Strategic Learning and Planning (Langley, 1988)
	Policy Decision-Making	Uncertainty Theory (Knight, 1921)
Talent Development Strategy	Policy Decision-Making	Meta-Policy Making (Dror, 1968)
	Policy Decision-Making	Incrementalism (Lindblom, 1959)
	Policy Decision-Making	Garbage Can Model (Cohen, March & Olsen, 1972)
	Strategic Management	Design Thinking / Future Design (Ackoff, 1981)
	Strategic Management	Participatory Strategic Planning (Langley, 1988)
	Policy Decision-Making	Narrative Policy Framework (Jones & McBeth, 2010)

[Table 3] Mapping of Three Core Mechanisms and Theoretical Frameworks, by Author.

5.7 Conclusion

This chapter has sought to articulate a theoretically grounded and practically applicable foundation for a future-oriented policy design framework, centred on the integrative convergence of policy decision-making theories and strategic management principles. Beginning with a reassessment of Lasswell's functional policy cycle, it was demonstrated that while foundational in structuring policy analysis, Lasswell's model requires critical supplementation to remain relevant within today's complex and uncertain policy environments. In this regard, the chapter has examined the UK Futures Framework—rooted in the ROAMEF model—as an empirical case of how governments are operationalising strategic foresight in response to volatile governance conditions.

Subsequent sections explored how complexity-informed policy theories, such as ACF, PET, MSF, SES, and meta-policy frameworks, provide the necessary theoretical scaffolding to reinterpret the linear logic of classical models. These theories illuminate the multiplicity of actors, the non-linearity of processes, and the embedded nature of power and belief systems that influence contemporary policy-making.

Equally, this chapter has demonstrated the relevance of strategic management theories—from Ackoff's purposeful design to Godet's scenario planning and Langley's strategy-as-learning framework—in embedding adaptiveness, long-term vision, and institutional learning into policy structures. The cross-disciplinary synthesis of these two domains supports the design of resilient governance mechanisms capable of navigating both strategic complexity and operational feasibility.

To operationalise these insights, three interlinked mechanisms were proposed: Development and Operation Strategy, Monitoring and Evaluation Strategy, and Talent Development Strategy. Each mechanism integrates core theoretical insights and responds to the governance needs of future-facing public institutions, such as the UK Government's GO-Science under the DSIT. These mechanisms provide a structural blueprint for embedding foresight into institutional practice.

Ultimately, the chapter argues for a paradigm shift from static, prediction-oriented policy tools to adaptive, systemic, and anticipatory governance architectures. By reconfiguring the theoretical legacies of Lasswell through the lens of complexity, strategic foresight, and public

sector transformation, this study lays the groundwork for a new generation of policy design—one that is not only analytically rigorous but also strategically agile and institutionally grounded.

Chapter 6 Methodology

6.1 Introduction

Since the late 20th century, the UK government has progressively institutionalised foresight within policy planning, notably through initiatives led by GO-Science. Under Tony Blair's premiership, early stakeholder-driven programmes evolved into 'deep foresight programmes' that focused more explicitly on long-term structural change drivers (Georghiou, 1996; Miles and Keenan, 2008; Miles, 2010). While this shift advanced theoretical areas such as systems thinking, participatory governance, and ethical policy design, its practical impact remained limited. For example, the pandemic preparedness strategy developed after the 2001 foot-and-mouth outbreak failed to inform effective responses during the COVID-19 crisis, revealing how long-term visioning was sidelined by short-term crisis management (Sardar, 2010; Cuhls, 2003).

To translate foresight into actionable policy, structural barriers—such as institutional inertia and cultural resistance—must be addressed. Scholars highlight the importance of participatory governance, mission-oriented objectives, adaptive delivery, and political continuity for building a sustainable foresight system (Miller, 2018; Sardar, 2010).

This study seeks to identify key enablers for effective foresight systems by analysing both theoretical and applied cases. It focuses on the UK's MOD (Defence Futures) and GO-Science, as well as the US Department of Agriculture (USDA) and the USCG. Through comparative analysis and practitioner interviews, the research proposes a process-based foresight framework with strong policy relevance.

To this end, this chapter outlines the research methodology. Section 6.2 explains the rationale for using qualitative methods, particularly case studies and semi-structured interviews. Section 6.3 discusses the type of case study selected and presents the overall research design. Section 6.4 outlines the case selection criteria and the rationale for choosing the UK and US. Section 6.5 details the data collection procedures, and Section 6.6 introduces the methods of data analysis, including comparative analysis and triangulation. Finally, Section 6.7 discusses the integration of these components and reflects on their collective contributions to the study.

6.2 Research Strategy

This study employs a qualitative research methodology—specifically, a case study approach complemented by semi-structured interviews—to examine the limitations and potential improvements in the UK government’s implementation of strategic foresight. Such methods are well-suited to developing conceptual frameworks and assessing practical feasibility through in-depth exploration of complex cases (Yin, 2009; 2014).

Qualitative research is particularly effective in examining human behaviour, lived experiences, and social contexts, offering nuanced insights into complex phenomena (Creswell, 2007; Lincoln and Guba, 1985). It captures how individuals and groups construct meaning and provides contextual depth often overlooked in quantitative approaches (Glaser and Strauss, 1967; Patton, 1990). Its capacity to account for cultural, social, and organisational specificity enhances its explanatory power (Yin, 2009; Stake, 1995). Furthermore, its flexibility allows researchers to adapt to emerging themes and incorporate unexpected findings throughout the research process (Miles and Huberman, 1994; Tracy, 2010). By using diverse data collection techniques, qualitative research yields rich, layered insights and helps identify complex patterns and actionable outcomes (Eisenhardt, 1989; Flyvbjerg, 2006).

In addition, qualitative approaches support theory development grounded in real-world issues (Eisenhardt and Graebner, 2007; Charmaz, 2006), while enhancing credibility and democratic engagement by amplifying participants’ voices (Denzin and Lincoln, 2005; Creswell and Poth, 2018). This makes them especially suitable for exploratory studies that challenge dominant paradigms or investigate emerging practices (Ronson, 2011; Flyvbjerg, 2006). Drawing on these strengths, this study aims to compare UK and US approaches to strategic foresight and propose a novel, practical framework to bridge the gap between theory and implementation.

Nonetheless, qualitative research—despite its strengths—poses several methodological challenges that must be addressed. First, the issue of limited generalisability is frequently cited. The small and context-specific nature of qualitative samples can constrain the broad applicability of findings (Yin, 2014; Flyvbjerg, 2006). To mitigate this, the present study incorporates a comparative case analysis and considers transferability at the research design stage (Lincoln and Guba, 1985). Second, researcher subjectivity may introduce bias in data interpretation (Stake, 1995; Denzin and Lincoln, 2005). This study addresses such concerns through triangulation, integrating multiple sources and perspectives, and ensuring transparency

throughout the research process to enhance credibility (Miles and Huberman, 1994; Patton, 1990). Third, qualitative research often demands substantial time and resources for data collection and analysis (Creswell and Poth, 2018; Eisenhardt, 1989). This challenge is mitigated through the careful planning of research questions and the establishment of a structured analytical framework in the early stages of the study (Yin, 2009). Fourth, qualitative research is frequently criticised for its limited replicability compared to quantitative methods (Glaser and Strauss, 1967; Charmaz, 2006). To address this, the study incorporates detailed documentation and iterative data validation procedures to enhance reliability (Creswell, 2007; Tracy, 2010). Fifth, the quality of qualitative research is highly dependent on the researcher's expertise, which may affect the overall rigour and reliability of findings (Denzin and Lincoln, 2005; Creswell, 2007). Thus, adequate training and a strong methodological foundation are essential for ensuring researcher competence (Patton, 1990).

Despite these limitations, when supported by appropriate methodological strategies, qualitative research remains a powerful tool for achieving deep, contextually grounded insights and for generating practical, meaningful contributions to both theory and practice.

6.2.1 Case study

The case study is a research methodology designed to provide an in-depth understanding of complex phenomena through the detailed investigation of specific events, organisations, individuals, or groups. It can incorporate qualitative, quantitative, or mixed methods, with a strong focus on real-world context (Yin, 2014; Stake, 1995). Yin (2014) defines the case study as an empirical inquiry that examines a contemporary phenomenon within its real-life setting, particularly where the boundaries between context and subject are blurred. He argues that case studies are particularly suited to addressing “why” and “how” questions. Stake (1995) emphasises the method's capacity to explore the uniqueness and intricacy of individual cases holistically. Likewise, Eisenhardt (1989) views case studies as a robust tool for theory-building, while Flyvbjerg (2006) highlights their value in producing rich, contextual insights with practical relevance and broader generalisability.

Case study methodology is widely used across disciplines such as public policy, management, education, health, and the social sciences. In policy research, case studies help evaluate effectiveness or uncover underlying issues, while in management, they support analysis of strategic decision-making and innovation processes (Flyvbjerg, 2006; Eisenhardt, 1989; Stake,

1995). They are also valuable for diagnosing organisational problems, understanding community dynamics, and designing or assessing public interventions (Creswell and Poth, 2018; Lincoln and Guba, 1985; Denzin and Lincoln, 2005).

In this study, the case study approach is particularly appropriate due to the multidimensional and interactive nature of the socio-economic phenomena being examined (Creswell and Poth, 2018; Patton, 1990). Case studies offer deep, context-rich insights not attainable through quantitative methods alone and are especially effective in analysing policies involving multiple stakeholders, complex governance structures, and long-term outcomes. Their methodological flexibility and analytical depth make them well-suited for capturing such complexity (Eisenhardt and Graebner, 2007; Yin, 2014).

The strength of case study research lies in its ability to inform policy development, build theory, support practical applications, and drive social change. By generating actionable, context-sensitive knowledge, case studies effectively bridge the gap between theory and practice (Eisenhardt and Graebner, 2007; Patton, 1990; Creswell and Poth, 2018).

A. Strengths and Advantages of Case Study Method in this research

This study aims to propose a practical framework for policy design and implementation through a comparative analysis of strategic foresight systems in the UK and the US. The case study methodology aligns well with these aims, offering both theoretical and practical contributions. First, case studies facilitate the development of theoretical models for foresight design and evaluation. By analysing four key initiatives—GO-Science and Defence Futures in the UK, and the USCG Evergreen Programme and USDA Forest Service in the US—this research identifies structural conditions, implementation mechanisms, and integration strategies, helping to construct a comparative analytical framework (Yin, 2014; Eisenhardt, 1989). Second, they offer actionable insights for policymakers and researchers by revealing institutional enablers and constraints, and by distilling lessons from the successes and limitations of foresight initiatives (Stake, 1995; Flyvbjerg, 2006). Third, the method supports the creation of comparative policy evaluation frameworks, proposing qualitative criteria to assess feasibility, sustainability, and institutionalisation across varied contexts (Creswell and Poth, 2018; Lincoln and Guba, 1985). Fourth, it advances theory-building by integrating diverse sources—literature, documents, and semi-structured interviews—to explore links between foresight and policy science (Eisenhardt and Graebner, 2007; Charmaz, 2006). Fifth,

case studies effectively capture the complexity of real-world governance, including interdepartmental coordination, stakeholder engagement, and long-term risk management—core features of strategic foresight (Yin, 2014; Stake, 1995).

In summary, this research leverages the analytical strengths of case study methodology to bridge theory and practice in strategic foresight policymaking. The approach enhances the depth, relevance, and applicability of findings in complex and uncertain policy contexts.

B. Overcoming Limitations of Case Studies

Numerous strategies have been developed to overcome the methodological limitations often associated with case study research. First, employing multiple cases helps improve the generalisability of findings by enabling comparative analysis and pattern recognition across varying contexts (Eisenhardt, 1989; Yin, 2014). Second, triangulation is central to ensuring research rigour. Drawing on diverse data sources or involving multiple analysts helps minimise bias and strengthens the reliability of results (Denzin and Lincoln, 2005; Stake, 1995). Third, transparency in research design is vital. Clear plans for data collection and analysis, alongside thorough documentation of methodological decisions, contribute to the credibility of the study (Miles and Huberman, 1994; Creswell and Poth, 2018). Fourth, external review and feedback mechanisms—such as peer evaluation—can identify weaknesses in design or execution and support methodological refinement (Patton, 1990; Flyvbjerg, 2006).

In conclusion, while case study research offers a robust framework for understanding complex social phenomena and generating practice-oriented insights, its methodological credibility and impact on policy design, implementation, and theoretical advancement can be substantially strengthened through the rigorous application of these strategies.

C. Case Study Methods in This Research

Case studies are a flexible research approach that enables researchers to utilise diverse data collection methods to gain a deep understanding of specific phenomena or cases (Yin, 2014; Creswell and Poth, 2018). Common methods include literature review, participant observation, interviews, document analysis, and surveys. These methods may be employed individually or

in combination as part of a multi-method approach to comprehensively explore the complexity and contextual elements of a case (Stake, 1995; Eisenhardt, 1989).

- **Literature Review:** This involves analysing existing research, policy documents, reports, and statistical data to explore prior knowledge relevant to the study. It provides background information, theoretical frameworks, and benchmarks for comparison (Creswell, 2007; Miles and Huberman, 1994).
- **Participant Observation:** Researchers directly engage with the case, collecting data on the context and dynamics. This is particularly effective for understanding subtle interactions and social contexts in policy-making or implementation processes (Denzin and Lincoln, 2005; Patton, 1990).
- **Interviews:** Interviews allow for the in-depth exploration of experiences and perspectives from key stakeholders or experts. Semi-structured interviews, in particular, balance structured questions with flexibility, enabling the collection of rich qualitative data (Yin, 2014; Stake, 1995).
- **Document Analysis:** Analysing official documents, reports, meeting minutes, and policy proposals provides insights into the formation and structural aspects of the case (Miles and Huberman, 1994; Yin, 2014).
- **Surveys:** Surveys are useful for collecting large-scale data related to the case, allowing researchers to statistically analyse diverse perspectives (Creswell, 2007; Flyvbjerg, 2006).

This study employed four qualitative research methods to analyse strategic foresight policy cases in the UK and the US: literature review (Creswell, 2007; Miles and Huberman, 1994), participant observation (Denzin and Lincoln, 2005; Patton, 1990), semi-structured interviews (Yin, 2014; Stake, 1995), and document analysis (Miles and Huberman, 1994; Yin, 2014). These methods collectively contributed to enhancing the analytical depth and validity of the research by facilitating the establishment of theoretical foundations, enabling contextual understanding of policy implementation environments, eliciting in-depth experiential insights from stakeholders, and enabling a systematic examination of institutional structures. Integrated as a multi-faceted approach, these methodologies ensured the rigour and comprehensiveness

necessary to fulfil the objectives of this research. The specific application of these case study methods will be detailed in section 6.5 Data Collection.

6.2.2 Interview

Interview research is a qualitative research method that involves one-to-one or group conversations to gather detailed and in-depth information from participants. It is used to explore participants' experiences, beliefs, attitudes, and social contexts, enabling researchers to gain profound insights related to the research questions (Kvale, 1996; Brinkmann and Kvale, 2015). As a vital tool in qualitative research, interviews are particularly effective in studies requiring a deep understanding of complex social problems and contextual nuances.

- Interview research encompasses various types, including structured, semi-structured, unstructured, and focus group interviews:
- Structured interviews follow a fixed set of questions and response frameworks, facilitating comparability and analysis.
- Semi-structured interviews offer flexibility, allowing researchers to pose key questions while encouraging open responses from participants (Patton, 1990; Rubin and Rubin, 2011).
- Unstructured interviews focus on drawing out participants' perspectives and experiences naturally through conversational dialogue (Seidman, 2006).
- Focus group interviews explore group opinions and interactions by engaging multiple participants in discussion (Morgan, 1997).

In policy research, interviews are a key method for linking expert insight with policy development (Creswell, 2007; Rubin and Rubin, 2011). Beyond simple data collection, they offer nuanced insights into participants' experiences, perspectives, and social contexts—providing empirical evidence to inform institutional and policy-level improvements. By generating actionable findings for policy and programme evaluation, interviews have proven effective in supporting meaningful change (Brinkmann, 2013; Charmaz, 2006).

This study employs semi-structured interviews as the primary data collection tool to analyse strategic foresight initiatives within British and US federal institutions. Interviews with policymakers, public officials, and academic experts offer a diverse range of perspectives, triangulated with documentary and literature-based evidence to build a comprehensive and practice-oriented policy framework. These interviews deepen the comparative case analysis by offering context-specific responses to the study's core research questions. To enhance the validity and reliability of findings, a series of validation interviews will be conducted in the final research phase. This iterative approach allows for critical review of preliminary conclusions and supports the development of a theoretically grounded and operationally relevant framework for strategic foresight in public policy.

A. Strengths and Advantages of Interview Approach in This Research

The adoption of a semi-structured interview approach in this study offers a range of methodological advantages that significantly contribute to both the depth and practical relevance of the research.

Firstly, semi-structured interviews provide critical insights into the complexity of policy processes and institutional dynamics. In the field of strategic foresight—where design, implementation barriers, and inter-organisational interactions are deeply entangled—it is essential to access practitioners' experiential knowledge and interpretive frameworks (Patton, 1990; Rubin and Rubin, 2011). By engaging with key actors in the UK and US, this research explores the internal workings of foresight systems often inaccessible through documents alone. Secondly, the flexible format allows for guided inquiry while also accommodating unanticipated insights. This adaptability enables a deeper understanding of the multifaceted and context-specific nature of foresight policymaking (Brinkmann and Kvale, 2015; Seidman, 2006). Thirdly, by integrating the perspectives of policymakers and experts, interviews enhance the legitimacy and applied relevance of the study (Charmaz, 2006; Denzin and Lincoln, 2005). These insights not only inform the research design but also help align the proposed framework with on-the-ground realities. Finally, validation interviews conducted at later stages of the study allowed participants to review and respond to preliminary findings, increasing the credibility and theoretical robustness of the research (Creswell and Poth, 2018; Miles and Huberman, 1994).

In sum, the interview approach represents a particularly suitable method for exploring the contextual complexity and layered realities of strategic foresight policymaking. It plays an

essential role in grounding the proposed policy framework in both theoretical rigour and practical applicability, thus enhancing the overall impact of this study.

B. Overcoming Limitations of the Interview Approach

While semi-structured interviews represent a powerful qualitative research method that offers rich contextual and in-depth insights, they inherently entail certain methodological limitations. This section outlines the commonly cited challenges associated with interview-based research and the specific strategies adopted in this study to address them.

Firstly, interview data is inherently subjective and may reflect cognitive biases from both respondents and researchers (Rubin and Rubin, 2011; Brinkmann and Kvale, 2015). Respondents may provide selective accounts based on their roles and interests, while researchers may unintentionally introduce bias in framing or interpreting questions. To address this, the study employed triangulation through document analysis, official records, and participant observation (Denzin, 1978; Creswell and Poth, 2018), enhancing data credibility and interpretive balance. Secondly, the limited generalisability of qualitative interviews—due to small and context-specific samples—can constrain broader applicability (Stake, 1995; Lincoln and Guba, 1985). This was addressed by adopting purposive sampling across diverse institutions and roles, and by conducting comparative case analysis between the UK and US. Thick description was used to increase contextual transferability. Thirdly, interviews are resource-intensive, requiring time and effort for preparation, transcription, and analysis (Seidman, 2006; Patton, 1990). The flexibility of semi-structured formats can also lead to thematic divergence. To mitigate this, a structured protocol was developed, aligned with core research questions. Key themes were manually coded through repeated listening and memo writing, followed by cross-case comparisons to extract consistent patterns and divergences.

These strategies enhance the reliability and validity of the study's findings. The interviews also provided essential insights into the institutional and operational contexts of strategic foresight programmes, supporting the development of actionable and policy-relevant conclusions.

6.3 Research Design

6.3.1 Typologies Based on Research Objectives and Approaches

Case studies can be categorised into various types, including exploratory, explanatory, descriptive, multiple-case, and clinical case studies, depending on the research objectives and approach. Each type is employed to explore new topics, explain causes and effects, or provide in-depth descriptions of specific phenomena (Yin, 2014; Eisenhardt, 1989; Stake, 1995; Eisenhardt and Graebner, 2007; Patton, 1990).

In pursuing its research objectives, this study employs a combination of explanatory and exploratory case study methodologies. From an explanatory standpoint, it compares strategic foresight approaches in the UK and the US to identify and account for the factors underlying their respective successes and failures. This aligns with Yin's (2014) assertion that case study research is especially apt when "the boundaries between phenomenon and context are not clearly evident." Yin further highlights the value of both single and multiple case studies in generating empirical insights into complex policy processes. By adopting this dual approach, the study enhances understanding of institutional foresight mechanisms and informs the development of context-sensitive, actionable policy frameworks.

As illustrated in Table 4, Yin (2014) highlights several key characteristics of explanatory case studies, particularly their effectiveness in clarifying phenomena and identifying the underlying reasons for the success or failure of specific policies or strategies.

Key Characteristic	Description
Explaining Cause-and-Effect Relationships	Explanatory case studies aim to uncover and clarify causal relationships between variables within real-world contexts, especially when these relationships are complex and multifaceted.
Studying Phenomena in Context	Yin emphasises the importance of examining phenomena within their natural contexts, particularly when the boundaries between the phenomenon and its environment are not clearly defined.
Multiple and Embedded Units of Analysis	Explanatory case studies often involve multiple levels of analysis or subunits within a larger case, allowing for a more comprehensive exploration of the research problem.
Use of Mixed Methods	Yin advocates for integrating qualitative and quantitative methods to strengthen the explanatory power of case studies, enabling triangulation of data from diverse sources.
Structured Approach to Data Collection and Analysis	Yin provides a systematic framework for designing case studies, including the development of research protocols, data organisation, and logical linking of evidence to research questions and theoretical propositions.

[Table 4] Key Characteristics of Explanatory Case Studies as Presented by Yin (2014)

From the perspective of exploratory case study, Eisenhardt (1989) provides an essential theoretical foundation. She highlights the utility of case studies in developing new theories, particularly when existing theories fail to provide adequate explanations or when examining emerging phenomena. This aligns with the study's aim of uncovering the underlying mechanisms of policy decision-making processes that have received limited attention in previous research, thereby offering preliminary insights for constructing a new strategic foresight framework.

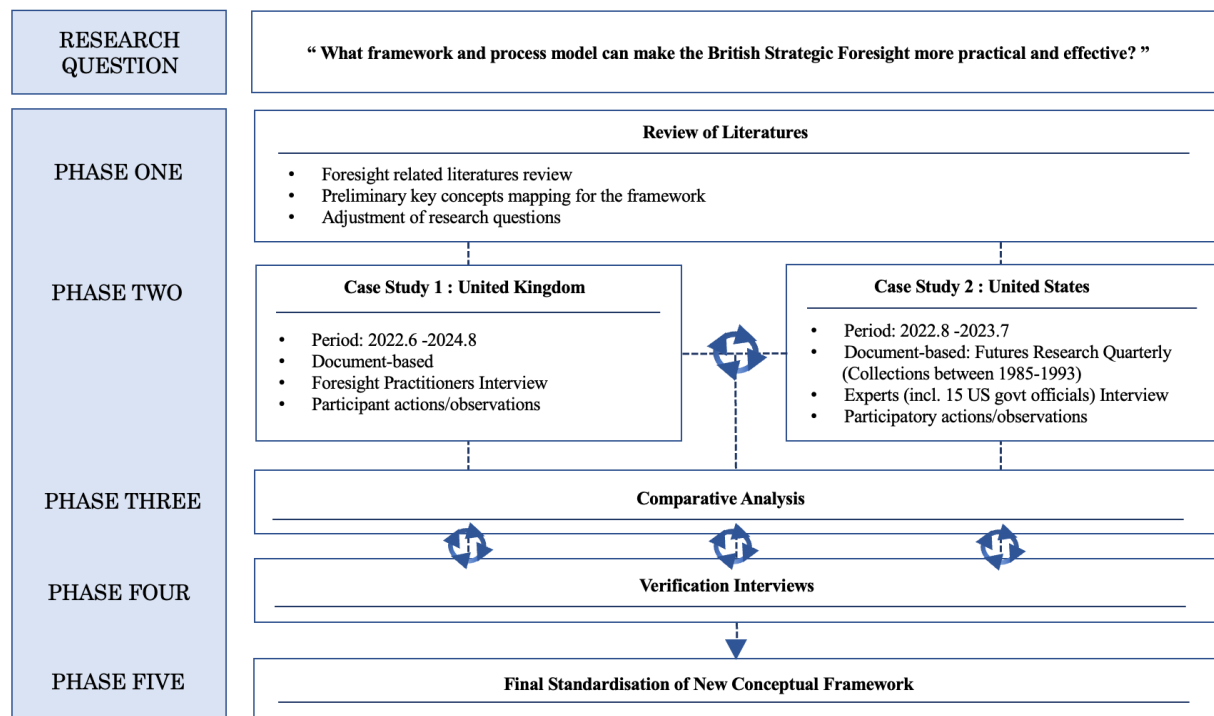
Table 5 outlines the characteristics and methodological contributions of exploratory case study design. Eisenhardt's (1989) work particularly emphasises theory development or extension, providing a basis for this study to fulfil its objectives.

Key Characteristic	Description
Theory-Building Focus	Exploratory case studies are designed to generate new theories or refine existing ones by exploring under-researched or emerging phenomena.
Use of Multiple Cases	Eisenhardt highlights the value of using multiple cases to identify patterns and variations, which enhances the generalisability and robustness of the emerging theory.
Theoretical Sampling	Cases are selected not randomly but based on their theoretical relevance and their potential to contribute to understanding the research problem.
Iterative Process	Exploratory case studies involve a dynamic, iterative process where data collection and analysis occur concurrently, allowing the researcher to refine the research focus and theoretical propositions as the study progresses.
Integration of Diverse Data Sources	Eisenhardt emphasises the use of various data sources, including interviews, archival records, and observations, to provide a rich and nuanced understanding of the case.
Pattern Recognition and Theory Development	The analysis focuses on identifying patterns and relationships within and across cases, leading to the development of new theoretical frameworks or constructs.
Adaptability to Context	Exploratory case studies allow for flexibility and adaptability to the specific research context, accommodating unexpected findings or new directions during the research process.

[Table 5] Key Characteristics of Exploratory Case Studies as Presented by Eisenhardt (1989)

Thus, this study combines the strengths of explanatory and exploratory case studies to deliver a more in-depth analysis and generate meaningful policy implications. This foundational research design enables a comprehensive analysis of the UK and US cases, contributing to the development of sustainable and long-term policy frameworks.

6.3.2 Research Process



[Figure 4] Research Process of the Study

Figure 4 outlines the sequential process of this study in the following five stages: (1) literature review and refinement of the research question, (2) multi-case study focusing on the US and UK, (3) triangulation-based comparative analysis and evidence synthesis, (4) interpretation and validation of results, and (5) comprehensive evaluation and standardisation.

- Phase One: Literature Review and Refinement of the Research Question

At the outset, this study undertook a comprehensive review of existing knowledge and theoretical frameworks related to national-level foresight and specific foresight initiatives within the UK, including policy reports and academic literature. The aim was to enhance the potential and validity of the research. Notably, research on the UK Government's national foresight initiatives has been limited since 2010, revealing a clear gap in the literature. This gap underscores the necessity and originality of the present study, as well as the importance of identifying overlooked factors or limitations in previous research. Through the literature review, the study's focus was clarified, key research questions and sub-questions were refined, and the feasibility of the project within the researcher's capabilities was assessed. Particular emphasis

was placed on examining how existing policy frameworks and processes are applied and evaluated within UK Government systems, and identifying areas requiring improvement. In addition, a preliminary review was carried out to examine the implementation of foresight programmes in advanced countries that seek to address long-term challenges and develop alternative strategies, as well as to consider the limitations of foresight in optimising policymaking. The decision to select the US as a key comparative case was made during this phase. This decision was informed by the example of the US incorporating foresight into national strategy following the WWII, particularly through the RAND Corporation. RAND established a systematic approach to planning national security and military strategies using strategic foresight, which laid the foundation for long-term policy development and became a cornerstone of national foresight practice in the US. The American experience of leveraging foresight for strategic and policy development provides a critical basis for a chronological and comparative analysis with the UK.

- Phase Two: Multi-Case Study Focusing on the UK and US

This research employs a multiple case study approach, focusing on the UK and the US. Each national case was analysed through an in-depth single-case design, supported by sub-case investigations. The formal research commenced with the UK case in June 2022, though preliminary work—including document analysis and ethics review—began in January 2020 during the early stages of the COVID-19 pandemic. Fieldwork in the US was subsequently conducted from August 2022 to July 2023, following the easing of UK lockdown measures in April 2022.

The UK case study began with a review of the “The Handbook of Technology Foresight (Georghiou et al., 2008)” by the Manchester Institute of Innovation Research (MIIoR), formerly PREST (Public Policy Research in Engineering, Science and Technology). Data collection focused on the historical evolution of UK foresight programmes, their methods, tools, goals, and the societal challenges they addressed. The influence of central government foresight on sub-national and international levels was also explored. Early findings were enriched by interviews with former PREST academics and practitioners, offering grounded insights into implementation dynamics.

The US case employed four main methods: literature review, document analysis, expert interviews, and participant observation. Key materials included archival issues of Futures Research Quarterly (1985–1993), accessed via public libraries and the World Future Society

in Washington, DC. Interviews explored three themes: the history of national foresight in the US, federal foresight practices and tools, and visions for its future development. Thirty-three interviews were conducted with current/former federal officials (17), non-profit/private-sector futurists (10), and academics (6).

Participant observation occurred at legislative foresight forums and international workshops in Washington, DC, offering practical exposure to foresight methodologies and institutional practice. Following US fieldwork, the researcher returned to the UK and engaged in additional workshops hosted by the Department for Transport and the Welsh Government. As an embedded observer, the researcher focused on the UK foresight ecosystem's sustainability and long-term evolution. Complementary interviews with policy practitioners deepened the analysis of institutional structures, operational routines, and embedded challenges.

These activities informed the selection of four focal cases for comparative analysis: USDA and USCG in the US, and GO-Science and Defence Futures in the UK. The study thus identifies structural conditions, implementation strategies, and integration mechanisms that shape the development and impact of strategic foresight across national contexts.

- Phase Three: Triangulation-Based Comparative Analysis and Synthesis

This phase involved integrating data collected from the UK and US case studies using triangulation techniques for systematic comparative analysis. The analysis synthesised diverse data sources, including literature, interviews, and participant observations, to identify multidimensional similarities and differences between the cases. Particular attention was paid to sub-cases within each country, exploring variations in conditions, policy integration and development approaches, participatory structures, and alternative solutions to identified limitations. For instance, the UK adopts a centralised approach, with the DSIT and the GO-Science leading foresight projects and training civil servants under the direction of the GCSA. UK foresight initiatives focus on integrating foresight with evidence-based policymaking grounded in science and technology, with limited public participation and an expert-driven model. In contrast, the US adopts a decentralised approach, integrating multidimensional elements such as science, economics, security, and technology, with a significant emphasis on national defence and security foresight. Agencies such as the RAND Corporation, the NIC, and the DOD independently conduct foresight activities. These differences highlight the potential to derive key patterns, success factors, and limitations for each case.

- Phase Four: Interpretation and Validation of Findings

At this stage, the research focused on synthesising the findings derived from the case studies in a systematic and coherent manner to address the central research question: “What lessons from US and UK strategic foresight practices can inform the development of a framework and process model to bridge the gap between theory and practice for more effective implementation in governance?” The core results from each case were distilled and critically examined, evaluating their theoretical foundations and practical utility within the broader context of policy theory and applied governance. To enhance the rigour and credibility of the analysis, expert validation interviews were conducted, providing reflective insights and external scrutiny of the preliminary conclusions. These insights were subsequently incorporated into the refinement of the proposed framework, thereby establishing a robust foundation for its comprehensive evaluation and future standardisation.

- Phase Five: Comprehensive Evaluation and Standardisation

The concluding phase comprised a rigorous and integrative appraisal of the entire research trajectory and its resultant findings, with a view to systematically articulating the study’s substantive contributions to both policy development and scholarly discourse. In response to the limitations surfaced over the course of the investigation, the research advanced a standardised strategic foresight framework alongside an operational process tailored for policy formulation and implementation. In addition, prospective avenues for future inquiry were delineated to facilitate the continued maturation and institutionalisation of strategic foresight as a field of study.

6.4 Case Selection

The UK and the US were selected as case studies as they fulfil the core selection criteria of policy relevance, contextual diversity, data accessibility, comparability, and practical significance (Stake, 1995; Yin, 2014; Seawright and Gerring, 2008). These cases not only meet the methodological standards for rigorous case study research, but also offer contrasting institutional contexts that enrich both theoretical understanding and practical insights.

In terms of policy relevance, both countries have distinct historical and institutional trajectories in developing and institutionalising strategic foresight. The US integrated foresight into

national security and defence planning from the post-WWII era, with institutions such as the RAND Corporation, the Department of Defense, and the National Intelligence Council playing pivotal roles. In contrast, the UK formally launched its foresight efforts with the creation of GO-Science in 1993, undergoing major restructuring under Prime Minister Tony Blair in 2002 to focus on future-oriented policymaking. While the UK's Ministry of Defence also undertakes foresight, much of this activity remains less visible publicly. These differing institutional paths provide a valuable comparative lens for examining foresight's role in public policy.

Contextually, the US operates a federal, decentralised governance system, enabling pluralistic foresight practices involving government, academia, the private sector, and civil society. By contrast, the UK's centralised model embeds foresight within a government-led, evidence-based framework, grounded in scientific and technological expertise. These structural differences form a key basis for comparative analysis.

Data accessibility also informed case selection. Both countries offer relatively high transparency, with access to policy documents, strategic reports, and expert networks. Shared language and historical ties facilitated fieldwork. The researcher's professional immersion in the US enabled access to qualitative data, including archives at Yale University and interviews with foresight practitioners at federal and international levels. In the UK, data were sourced from government publications, official foresight reports, academic literature, and interviews with experts in public policy and strategic foresight.

With regard to comparability and practical relevance, the UK and the US exhibit both similarities and differences in their foresight frameworks, implementation approaches, and goal-setting paradigms. The US generally adopts a multi-actor, integrationist model leveraging public-private collaboration, whereas the UK follows a technocratic approach led by government and scientific advisory bodies. Examining these contrasting models highlights both the limitations and potentials of national foresight systems, offering practical insights for policy innovation and institutional design.

Thus, the selection of the UK and US is not merely methodological but a strategic decision aligned with the analytical aims of this study. Their distinct yet mature foresight ecosystems provide a valuable basis for generating actionable knowledge and informing future models of strategic foresight governance.

6.5 Data Collection

The data introduced in Section 6.2.1 is here revisited with a more detailed and methodologically robust account of the collection process for each case. This section clarifies the procedures used—particularly document analysis, semi-structured interviews, and participant observation—within the policy environments and data access conditions specific to the UK and US. The aim is to demonstrate how the research design strategically ensured rich, triangulated data aligned with the central research questions, thereby enhancing the study’s validity and reliability.

6.5.1 Data Collection for the UK Case

Given that the primary aim of this study is to develop an improved mechanism for the UK Government’s strategic foresight programme, the UK case forms the central focus of the research. Data collection relating to the UK context was conducted between June 2002 and August 2024, overlapping with the US fieldwork period from August 2023 to July 2024.

The UK case study began with a comprehensive review of outputs from the Technology Foresight, led by MIOIR. Through targeted academic database searches, citation tracing, and review of reference materials, the researcher examined the historical evolution of UK foresight activities, associated methods and tools, strategic objectives, forward-looking policy responses, and their wider domestic and international impacts. Early in the process, it became evident that academic work on UK foresight post-2010 was limited, prompting a partial refinement of the core research questions.

Before initiating US fieldwork, the UK study focused on the institutional structure and operation of GO-Science-led foresight projects, the roles of key actors, and the relationship between centralised practices and more decentralised departmental applications. To address gaps identified in the literature and enhance empirical depth, semi-structured interviews were conducted with relevant stakeholders.

A total of 20 individuals participated: 15 current or former UK civil servants, 3 academics, and 2 private or third-sector representatives. Among the former civil servants, five had held roles as scientists, analysts, or senior officials directly involved in foresight programmes, while five

current officials were engaged in ongoing foresight and horizon scanning initiatives. Participants were selected through purposive and snowball sampling.

Purposive sampling targeted individuals with relevant expertise to strengthen the study's internal validity (Patton, 1990; Coyne, 1997; Creswell and Poth, 2018), while snowball sampling facilitated access to additional key actors via participant networks—particularly useful for reaching elite or hard-to-access groups (Goodman, 1961; Saunders et al., 2012). Collaboration with US-based foresight scholars also supported the UK inquiry, with some American interviewees directly recommending UK defence-related institutions and providing contacts.

Further details on the UK interview participants are presented in Table 6.

NO.	Country	Participants Indicator No.	Entity (G-I-A-N)	Current or former affiliation(s)	In-person	Online
1	UK	1	Government	UK MHCLG & DLUHC, SAGE for COVID19 Pandemic		O
2	UK	2	Government	UK DES (Director General), UK Foresight Project Lead	O	
3	UK	3	Government	UK DfT & BIS, UK Foresight Project advisor		O
4	UK	4	Government	UK Prime Minister's Strategy Unit	O	O
5	UK	5	Government	9th UK GCSA, Special Representative for Climate Change		O
6	UK	6	Industry	Foresight Community Chair	O	
7	UK	7	Academics	University of Manchester	O	
8	UK	8	Government	UK DSTL in MOD	O	O
9	UK	9	Government	UK DSIT, DfT	O	
10	UK	10	Government	UK DLUHC (Current MHCLG)	O	
11	UK	11	Government	UK Defence Futures in MOD	O	O
12	UK	12	Government	UK DSTL in MOD	O	O
13	UK	13	Government	Anonymous	O	O
14	UK	14	Academics	University of Manchester		O
15	UK	15	NPO	NESTA	O	O
16	UK	16	Academics	University of Manchester	O	
17	UK	17	Government	Anonymous	O	O
18	UK	18	Government	UK Politician, Yale University		O
19	UK	19	Government	Anonymous	O	
20	UK	20	Government	Anonymous		O

[Table 6] List of the UK Case Interview Participants, by Author

6.5.2 Data Collection for the US Case

Field research in the US was conducted over a 12-month period, from August 2022 to July 2023. The US was selected as a case study due to its distinct historical, institutional, and operational characteristics in the application of strategic foresight to policy design.

Firstly, since World War II, the US has been a pioneer in institutionalising foresight, notably through the RAND Corporation's influence on national security strategy. This historical trajectory offers key insights into how foresight becomes embedded in government systems. Secondly, the US's decentralised political structure and its multi-stakeholder, collaborative approach stand in contrast to the UK's centralised model. Strategic foresight in the US operates through dynamic interactions among federal agencies, the private sector, academia, and civil society, with notable impact across policy areas such as defence and security.

Thirdly, the conceptual framework of anticipatory governance—advanced by figures like Leon Fuerth and Peter Schwartz—closely aligns with this research's aims, offering a valuable lens for understanding structural responses to future uncertainty. Fourthly, the US provides a rich research environment, with extensive documentary resources and access to expert networks.

Three core themes shaped the semi-structured interviews for the US case: (i) the historical development of national foresight; (ii) strategic foresight practices within federal agencies; and (iii) normative aspirations and future directions for anticipatory governance. In total, 31 experts were interviewed: 15 current or former officials from eight federal agencies, 10 leading futurists from the private and non-profit sectors, and six academic scholars.

Further details regarding US interview participants are presented in Table 7.

The majority of interviews lasted approximately 60 minutes, ranging from 45 minutes to two hours. Participants received an overview of the research and the interview guide in advance, and all interviews were conducted with prior informed consent. For select government-based foresight experts, up to five follow-up meetings were held, either online or in person. Most interviews were audio recorded; however, in the case of certain high-level officials, only real-time note-taking was permitted.

Documentary analysis focused on uncovering the conceptual foundations and operational components of strategic foresight initiatives undertaken by US government institutions. A key source was Futures Research Quarterly, an esteemed academic journal in the field, particularly the articles published between 1985 and 1993. These materials were accessed via a collection donated by the World Future Society—headquartered in Washington, DC—to a public research library, where the author conducted on-site data retrieval.

NO.	Country	Participants Indicator No.	Entity (G-I-A-N)	Current or former affiliation(s)	In-person	Online
1	US	21	Government	US Coast Guard	O	
2	US	22	Industry	Foresight Institute CEO & President		O
3	US	23	Academics	University of Houston	O	O
4	US	24	Government	Anonymous	O	
5	US	25	NPO	Renown Futurist / Stanford University	O	
6	US	26	Government	US CIA Analysis Directorate		O
7	US	27	Industry	Renown Futurist / Foresight Community Chair	O	O
8	US	28	Government	USDA	O	O
9	US	29	Government	OPM, US Coast Guard	O	O
10	US	30	Government	National Intelligence Council Strategic Futures Group	O	
11	US	31	Government	US Space Force DOD Foresight Executive Principal Advisor	O	
12	US	32	Academics	Yale University	O	
13	US	33	NPO	Renown Futurist / Foresight Community Chair	O	O
14	US	34	Government	ODNI Strategic Futures Group	O	
15	US	35	Government	US EPA		O
16	US	36	Industry	Foresight Consulting	O	
17	US	37	Government	US CIA	O	
18	US	38	Government	US Government Accountability Office, PSFN Co-Founder	O	
19	US	39	Academics	Stanford University	O	
20	US	40	Academics	University of Houston, Teach the Future Founder (Current)	O	
21	US	41	NPO	Renown Futurist / Foresight Community Chair	O	
22	US	42	Industry	Salesforce Strategic Planning, Global Business Network		O
23	US	43	Academics	George Washington University		O
24	US	44	Industry	Foresight Consulting	O	
25	US	45	Government	Anonymous	O	O
26	US	46	Industry	Foresight Consulting (Climate & Foresight Strategy)	O	
27	US	47	Government	National Defense University Foundation	O	
28	US	48	Government	Anonymous		O
29	US	49	NPO	Futurist and technology forecaster		O
30	US	50	Academics	Stanford University	O	
31	US	51	Government	US CIA	O	

[Table 7] List of the US Case Interview Participants, by Author

6.6 Data Analysis

This study employs comparative case analysis and methodological triangulation as its primary analytical approaches to examine strategic foresight practices in the UK and the US. These methodologies are particularly well-suited to exploring complex socio-political contexts and policy-related challenges, as they enhance both the empirical reliability and analytical validity of the findings, while enabling a nuanced, multi-dimensional interpretation of the data.

6.6.1 Comparative Case Analysis

Comparative case analysis is a methodological approach that systematically compares two or more cases in order to identify commonalities and differences, thereby generating theoretically and policy-relevant insights (Ragin, 1987). This approach combines structural frameworks with case-centred narratives, offering a robust lens for examining strategic patterns across diverse institutional and cultural contexts. This study employs this method to compare the implementation of strategic foresight initiatives in the US and the UK, focusing on their respective historical, institutional, and operational dynamics.

In the US, the USDA—particularly through the Forest Service—has established an integrated foresight strategy encompassing horizon scanning, scenario planning, and long-term risk mapping. This approach enhances policy flexibility and local governance in addressing ecological risks and climate change, positioning the USDA as a model for foresight-driven environmental governance. The US Coast Guard’s Evergreen Program exemplifies institutionalised foresight through scenario planning, strategic questioning, and leadership development. Rather than treating foresight as an episodic exercise, Evergreen embeds it as a structural and cultural feature of decision-making, supported by cyclical reviews and external collaboration. It stands as a pioneering model of sustained, embedded foresight.

In the UK, the MOD incorporates foresight into long-term defence planning via the Defence Futures. This initiative uses scenario-based strategic analysis to address technological, geopolitical, and sociocultural shifts. Foresight outcomes directly inform policy priorities, R&D investment, and resource allocation. Collaboration with academia and industry further institutionalises foresight within the defence sector.

Meanwhile, the UK GO-Science has developed a governance-oriented foresight system that spans multiple departments, playing a central role in supporting long-term policy planning and interdepartmental collaboration. This study focuses on the Future of Cities project, which explored systemic urban transformations driven by demographic change, technological advancement, climate impact, and infrastructure needs. Through collaborative governance with local authorities, urban planners, and private sector stakeholders, GO-Science facilitated the development of city-focused foresight scenarios. These informed both national and local strategic planning, with a particular emphasis on sustainability, resilience, technological integration, and social inclusion. Nevertheless, structural limitations such as capacity gaps between central and local government, weak policy coordination, and inconsistent leadership were identified as persistent challenges.

Accordingly, GO-Science has facilitated the development of citizen- and city-centred foresight scenarios through collaborative governance with local authorities, urban planners, and private sector stakeholders. These scenarios have informed both national and local strategic planning, with a particular emphasis on sustainability, resilience, technological integration, and social inclusion. Nevertheless, structural limitations—such as capacity disparities between central and local governments, weak policy coordination, and inconsistent leadership—remain persistent challenges.

Taken together, these comparative cases reveal diverse institutional configurations and foresight architectures. They illuminate the structural principles necessary for bridging the gap between long-term strategic visioning and policy execution. Furthermore, the analysis identifies enabling conditions, sustainability mechanisms, and organisational capacity-building strategies that provide actionable insights for developing more coherent and implementable strategic foresight frameworks.

6.6.2 Triangulation

Triangulation constitutes the integration of multiple data sources, methodological strategies, and theoretical perspectives to bolster the validity, reliability, and depth of research findings. Defined by Denzin (1978) as the analytic process of employing diverse perspectives to counteract potential biases and enhance the robustness of conclusions, triangulation serves as a cornerstone of rigorous qualitative inquiry.

- Document Analysis

A comprehensive review of key policy documents, governmental reports, scholarly publications, and official records was undertaken to trace the historical evolution and contemporary deployment of foresight strategies in the UK and the US. Critical sources—such as *Futures Research Quarterly* (1985–1993)—offered valuable insights into the conceptual foundations, institutional configurations, and operational mechanisms informing the development of foresight policies in both contexts.

- Semi-Structured Interviews

Based on a total of 60 interview participants, semi-structured interviews were conducted during the data collection period (June 2022–August 2024), involving policymakers, academic experts, and practitioners from the UK, the US, Singapore, Finland, and the Republic of Korea. These interviews provided not only the information cited in the paper but also broader background insights and advisory comments—for example, suggestions to consider not only GO-Science but also the MOD’s foresight systems. However, given the study’s focus on four core case studies, the final interview sample cited in the paper includes only 51 participants from the UK and the US.

- Participatory Observation

The researcher engaged directly in foresight-related workshops and conferences hosted in both the UK and the US. This immersive, participatory approach enabled the collection of contextual and experiential data that could not be captured through textual analysis or interviews alone. Observations of real-time deliberations and implementation processes provided valuable insights into the lived realities of strategic foresight practice, enriching the empirical grounding of the study.

6.7 Conclusion: Integration and Contributions of the Methods

Through the integration of comparative case analysis and methodological triangulation, this study attained a more refined and comprehensive understanding of the complex dynamics underpinning strategic foresight policies in the UK and the US. The comparative case analysis facilitated a systematic examination of the distinctive policy characteristics and implementation contexts within each national setting, thereby illuminating structural and

procedural divergences. Concurrently, triangulation enabled the synthesis of heterogeneous data sources—document analysis, expert interviews, and policy artefacts—allowing for the generation of multifaceted and corroborated responses to the research questions. In sum, the combined use of comparative case analysis and triangulation underpinned the study’s in-depth investigation of strategic foresight policy frameworks across the two contexts. The empirical and theoretical insights derived from these methods were instrumental in the development of an original conceptual framework for long-term policy formulation and execution. This methodological approach not only advances the field of strategic policy studies but also yields both theoretical and applied contributions of relevance to a broader spectrum of academic disciplines concerned with governance, foresight, and policy innovation.

Chapter 7. Research & Findings 1:

Strategic Foresight in the US Government

Chapter 7 explores the institutionalisation and practice of strategic foresight within the US government, drawing on case studies and interview-based research to examine developments across the executive, legislative, and state levels. Building on the theoretical framework established in Chapter 5—namely, the three strategic considerations of Mission Implementation & Support (Development & Operation Strategy), Evaluation (Monitoring and Evaluation Strategy), and Talent Development (Talent Development Strategy)—this chapter analyses how these principles manifest in different governmental contexts. Section 7.1, grounded in *Strategic Foresight in the Federal Government* (Greenblott et al., 2018), assesses current foresight efforts within the executive branch under the framing of "The State of Strategic Foresight within the U.S. Executive Branch", highlighting key institutional approaches and thematic priorities. Section 7.2 turns to the legislative branch, tracing the evolution of congressional foresight from historical initiatives such as CRS, CCF, and CIF to more recent developments centred on GAO and the FFCOI, examined under "The State of Strategic Foresight within the U.S. Legislature". Lastly, Section 7.3 investigates foresight activity within U.S. state governments, where innovative and adaptive practices often emerge despite a lack of formalised structures. Across all three domains, the chapter applies the analytical lens of strategic mission, evaluation, and talent development, while drawing comparative insights from the UK's evolving foresight frameworks.

7.1 Strategic Foresight in the Executive Branch

This section examines how strategic foresight has been institutionalised and operationalised within the U.S. Executive Branch, drawing primarily on the 2018 report *Strategic Foresight in the Federal Government* (Greenblott et al., 2018). It begins with an overview of the current state of foresight capacity within federal executive bodies (7.1.1), followed by a discussion of the various methodological and organisational approaches employed by different agencies (7.1.2). The section then presents three key findings identified through document analysis and interviews: the critical role of strong and sustained leadership (7.1.3), the strategic value of

engaging external experts and communities of practice (7.1.4), and the growing emphasis on internal staff training and capacity building (7.1.5). The final part of the section (7.1.6) synthesises these findings through a three-pillar analytical lens—Mission Implementation & Support, Evaluation, and Talent Development—as established in Chapter 5. This enables a comparative and integrative reflection on how foresight is embedded within executive governance structures and where further institutional strengthening may be warranted.

7.1.1 The State of Strategic Foresight within the U.S. Executive Branch

Strategic foresight within the U.S. executive branch is closely associated with the domain of policy implementation. Centred around the President, various departments and agencies are charged with the responsibility of designing and enacting policies that anticipate and address long-term uncertainties. These responsibilities include proactive responses to critical issues such as technological innovation, international relations, national security, and macroeconomic conditions—domains in which the need for foresight-based governance is becoming increasingly evident.

To date, the most comprehensive study of foresight practices within the U.S. executive branch has been the report on strategic foresight in the federal government by Greenblott *et al.* (2018). In 2023, the author of the present study held a discussion with Joe Cyrulik, the Director of the former Strategic Futures Group (SFG) at the National Intelligence Council within the Office of the Director of National Intelligence (ODNI). When asked about developments since the 2018 report, Cyrulik noted that foresight activities had expanded and become more sophisticated across federal agencies, with a greater diversity of methodologies now in use. Despite this progress, systematic research on strategic foresight within the executive branch has remained noticeably limited since 2018. Accordingly, this study adopts Greenblott *et al.* (2018) as a principal reference point for assessing the utilisation of strategic foresight within the U.S. administration. In addition, the author conducted a follow-up interview with Greenblott in 2023 to verify and contextualise the findings of the earlier report.

An earlier theoretical foundation was laid by Leon Fuerth, former National Security Adviser, who in 2009 and 2012 proposed the concept of anticipatory governance. Fuerth argued that long-range foresight should be structurally integrated into policymaking, asserting that governance systems must go beyond merely responding to emerging challenges, and instead institutionalise foresight as a core decision-making function. He supported this claim by citing

historical cases in which the U.S. federal government made long-term strategic investments despite short-term political and economic costs. These include the Marshall Plan, the GI Bill, the establishment of land-grant universities, the transcontinental railroad and the Panama Canal, the acquisition of Alaska, the interstate highway system, and the creation of post-war international financial institutions. According to Fuerth, these examples demonstrate that foresight is not simply a tool for crisis prevention, but rather a strategic capacity foundational to national resilience and global leadership.

Most federal foresight programmes operate with a 20–40 year time horizon, allowing agencies to trace developmental trends, assess technological impacts, and anticipate disruptions. The Office of Management and Budget (OMB) has formally encouraged integration of foresight into medium- and long-term planning through Circular A–11 (2016, 2017), which frames foresight as a distinct approach for addressing broad, long-term issues. Agencies are expected to use methods such as environmental scanning, trend analysis, and scenario planning—explicitly outlined in Part 6 of Circular A–11—to identify emerging threats, seize opportunities, and strengthen strategic capacity. For example, the U.S. EPA has employed foresight tools since the 1980s. From 1998, the agency expanded its efforts in response to issues like population growth, climate change, and nanotechnology (EPA, 2016). However, foresight remained peripheral to internal processes. In 2015, the EPA launched a pilot project involving external experts to better align foresight with strategic planning.

Greenblott et al. (2018) consolidated these developments through a study involving 19 federal agencies and two experts, with the EPA as a key case. Semi-structured interviews examined foresight practices, methodologies, staffing, and links to strategic planning and risk management. A major finding was the wide disparity in resources: most agencies had only 0.5 to 2 full-time equivalent (FTE) staff, while defence and intelligence agencies employed up to 15 (Greenblott et al., 2018; Fuerth and Faber, 2012). Many agencies also relied on external consultants and provided foresight training through general and specialist programmes.

Consequently, defence and intelligence agencies were found to allocate substantially higher budgets to foresight activities. For instance, the U.S. Coast Guard’s Evergreen Project operates with an annual budget of approximately USD 500,000–750,000; the Marine Corps allocates around USD 2.3 million; and the Office of Net Assessment (ONA) within the Department of Defense invests between USD 15 and 20 million. These figures underscore the significant role of foresight in national security and strategic integration.

“Much of this work (strategic foresight) came out of the U.S. Department of Defense, particularly during the tenure of Robert McNamara, who was the eighth U.S. Secretary of Defense from 1961 to 1968, under Presidents Kennedy and Johnson at the height of the Cold War. He tried to professionalize defense spending and planning by introducing more systematic, data-driven methods. That was quite new at the time.” (Gorbis, 2023, Interview)

As of 2018, there were 17 defence and intelligence agencies within the federal government, a number which has since increased to 18. Among these, six defence bodies—including the Air Force, Marine Corps, Coast Guard, National Geospatial-Intelligence Agency, National Guard Bureau, and the Office of Net Assessment—and two intelligence organisations—the CIA and the NIC—operated foresight programmes led by senior-level managers. These units conduct foresight activities tailored to their respective strategic domains, seeking to enhance strategic agility and ensure coherence with long-term institutional objectives amidst volatile geopolitical conditions.

Foresight practitioners across these agencies have increasingly emphasised the importance of cultivating a “foresight ecosystem.” This concept refers to the identification and interconnection of forward-looking perspectives across departmental silos, thereby fostering organisational integration and shared strategic thinking. Through such mechanisms, foresight can evolve from a specialised function into a widely adopted mindset that enhances institutional resilience and coherence.

Achieving this vision requires a shift from purely theoretical instruction to practice-oriented training that can be directly applied to policy and strategy development (Habegger, 2010). Another critical issue concerns the institutional location of foresight functions, which vary widely—some are situated within executive offices, others within planning or research units. In contrast, foresight institutions such as Canada’s Policy Horizons and Singapore’s Centre for Strategic Futures are embedded directly within the offices of their respective heads of government, ensuring that foresight insights inform high-level policymaking.

“But that office — and much of the government investment in foresight — was eliminated under President Reagan. I would say under Reagan, a lot of these things have disappeared. Many programs were defunded at that time.” (Gorbis, 2023, Interview)

Fuerth (2009) has explicitly advocated for the creation of a foresight unit within the White House, arguing that a structure offering direct strategic advisory functions to the President and

senior officials would significantly enhance policy coordination and the design of integrated strategies (Ronis, 2023, Interview). While many senior officials and practitioners have expressed support for this proposition, successive U.S. administrations have yet to institutionalise such a structure (Fuerth and Faber, 2012; Scoblic, 2020).

7.1.2 Approaches to Strategic Foresight used by US Federal Organisations

According to the survey findings presented in Strategic Foresight in the Federal Government (Greenblott et al., 2018), the two most frequently employed foresight methodologies among U.S. federal executive agencies are horizon scanning and scenario planning—each utilized by at least 15 of the 19 agencies interviewed.

	USAG	BOP	BSEE	CIA	USCG	VA	EPA	FBI	FEMA	USFS	GAO	USMC	NGA	NGB	NIC	ONA	OPM	Total
Horizon Scanning/ Trend Analysis	X	X	X	X	X	X	X		X	X	X	X	X		X		X	15
Scenarios	X	X			X	X		X	X	X	X	X	X	X	X	X	X	15
COP/ Speaker Series							X	X			X							4
Delphi		X						X			X							3
Formal Foresight Training		X					X								X			2
Simulation/Models																		1
Backcasting		X																1
Futures Wheel										X								1
Assumption Testing													X					1

Table 8 Foresight Methods Used by the US Federal Agencies (Greenblott et al., 2018)

Horizon scanning, also referred to as environmental or trend scanning, refers to the systematic identification and analysis of emerging trends and developments that may have implications for an organisation's future (Habegger, 2010). Rather than merely extrapolating from current assumptions, this method focuses on identifying areas of significant potential change, including new threats, unmet responsibilities, or latent opportunities. It also plays a critical role in generating insights into ongoing organisational challenges and anticipating new developments that may warrant strategic attention.

In practice, horizon scanning typically serves dual functions: (1) to extract and synthesise strategic insights for senior leadership, and (2) to act as a foundational input into subsequent scenario planning processes (Greenblott et al., 2018). Some agencies, such as the Department of Veterans Affairs (VA) and the USCG, conduct intensive scans every four years as part of their strategic foresight cycle, supplemented by lighter, continuous scanning. Others, like the

Central Intelligence Agency (CIA), operate dedicated scanning programs such as the Emerging Trends Program that gather intelligence from global hotspots and non-traditional sources like science-fiction authors and futurists.

The U.S. Marine Corps (USMC), the National Guard Bureau (NGB), and the National Geospatial-Intelligence Agency (NGA) all actively engage in scanning but use distinctive frameworks such as STEEP (Social, Technological, Economic, Environmental, Political) analysis, interdisciplinary working groups, and crowdsourced data platforms. FEMA, notably, formed a 70-person scan group inclusive of non-federal actors, such as nonprofits and local officials, to incorporate community-based knowledge into strategic assessments.

Scenario planning, equally prevalent, involves constructing plausible and internally coherent narratives about alternative future conditions. These scenarios are not predictions but serve as strategic thought experiments to help decision-makers expand their mental models and better anticipate uncertainty. Agencies such as the USCG and VA embed scenario planning within fixed planning cycles. For instance, the USCG's Evergreen foresight cycle is synchronized with the four-year tenure of each Commandant, ensuring strategic continuity.

Scenario development processes differ across agencies. Some, like the USCG, begin with numerous drivers of change—initially generating up to 16 draft scenarios—before refining them into three to five comprehensive narratives. Others, such as the USMC, develop "accelerated variants" of baseline scenarios to stress-test specific issues like water scarcity or technological disruption. Scenario application also varies by institutional function. The NGA employs near-term scenarios for internal teams, the ONA uses them in defence war-gaming, and the U.S. Forest Service applies them to support local climate adaptation. At the VA, scenario-based planning identifies strategic imperatives, which are translated into measurable goals and incorporated into formal plans through gap analysis. Recent innovations have enhanced traditional approaches. The USCG's Evergreen V initiative (2022) used data-informed personas to frame scenarios within behavioural and demographic shifts. It also introduced immersive simulation gaming, enabling participants to navigate evolving environments and test strategic responses—thereby enriching engagement and decision-making.

Beyond these two dominant tools, other foresight methodologies are in use across the federal landscape:

- Delphi Forecasting (FBI, NIC): A consensus-building method involving iterative expert surveys.
- Backcasting (VA, USFS): Starting from a desired future and mapping backward to present actions.
- Futures Wheel (USFS, EPA): Mapping first- and second-order consequences of changes.
- Key Assumption Testing and Red Teaming (NIC, ONA): Challenge current institutional assumptions to improve decision robustness.
- Simulation and Modeling (ONA): Used to test tactical responses and stress scenarios in dynamic environments.

Community of Practice (CoP) models are also prevalent. These informal, often inter-agency groups (e.g., at the EPA, FEMA, BOP) promote knowledge-sharing and cross-agency collaboration through speaker series, workshops, and peer learning. They serve as incubators for broader cultural shifts in strategic thinking.

In sum, while horizon scanning and scenario planning remain foundational, the integration of complementary methods—Delphi, backcasting, simulation, and foresight training—reflects an evolving toolkit tailored to the diverse missions and constraints of federal agencies. The most advanced programs institutionalise foresight as part of regular planning cycles, draw on external expertise, and ensure leadership engagement, all while maintaining adaptive flexibility in method selection.

7.1.3 Finding 1: Strong Leadership as a Catalyst for Institutional Foresight

One of the most consistent findings across all interviews was the indispensable role of strong and engaged leadership in embedding and sustaining strategic foresight practices within federal agencies (Greenblott et al., 2018). Foresight, by its nature, requires leadership not merely as passive recipients of future insights, but as active co-creators of long-term vision and institutional response. When agency leaders are directly involved in foresight processes, it strengthens both the strategic legitimacy and the practical uptake of resulting recommendations.

Numerous agencies have developed mechanisms to incorporate leadership more fully into foresight cycles. Among the most effective is the direct involvement of senior decision-makers in scenario development and strategic interpretation. For instance, the Federal Emergency

Management Agency (FEMA) appointed nine senior executives as Priority Champions, each charged with overseeing the development of strategic objectives aligned to foresight findings. These goals were not only embedded in institutional planning but were also linked to individual performance metrics, ensuring accountability and structural alignment. FEMA further employed visual summary tools—so-called “placemats”—to distill key trends, emergent challenges, and proposed strategic goals into accessible formats for leadership deliberation.

Similarly, the USFS aligned foresight research with leadership priorities through the use of implications wheels, which visualize first-, second-, and third-order consequences of policy options. This facilitated long-term thinking among leadership and helped integrate foresight into R&D governance at the Northern Research Station (Ager et al., 2021). The National Geospatial-Intelligence Agency (NGA) convened offsite workshops with senior leaders to deliberate on foresight-derived scenarios and their strategic implications. The Department of Veterans Affairs (VA) institutionalized a recurrent workshop model, enabling leaders to revisit and iteratively refine scenarios over time, linking evolving insights to multi-year strategic objectives (U.S. Department of Veterans Affairs, 2024). The EPA took a more distributed approach by involving senior leadership throughout the horizon scanning phase. Identified issues were collaboratively assessed across departments and leadership tiers to determine strategic priorities, reinforcing foresight as an iterative and organization-wide learning process (EPA, 2022). A particularly robust example of leadership-centered foresight is the USCG’s Evergreen Program, which aligns its four-year foresight cycle with the Commandant’s term. This synchrony ensures that scenario development and strategic intent are co-produced by incoming leadership, focusing on a 15- to 25-year outlook. Active leadership participation ensures that foresight outcomes inform institutional priorities and are woven into the formal Commandant’s Intent—effectively serving as the agency’s strategic plan (USCG, 2019).

Leadership engagement is not merely instrumental for the success of foresight initiatives; it serves a broader cultural function. It helps cultivate a long-term, anticipatory mindset across agencies, particularly in domains such as maritime security, where volatility and complexity are prevalent. As Habegger (2010) emphasizes, while periodic foresight exercises have value, it is the continuous integration of scanning and reflection into leadership practice that builds true institutional resilience. Yet not all agencies have fully embraced this iterative model. In several instances, foresight has remained a one-off exercise, insufficiently embedded within planning structures or decision-making workflows (Ziegler et al., 2024). These disparities underscore the criticality of leadership commitment in transforming foresight from a peripheral activity to a central component of strategic governance.

When leaders engage directly in foresight, it often has a ripple effect: catalyzing wider participation, legitimizing foresight across functional units, and seeding a more robust organizational culture of long-term thinking. As Fuerth and Faber (2012) argue, leadership in foresight is not merely an administrative responsibility but a strategic imperative for navigating complexity and securing institutional futures.

7.1.4 Finding 2: The Strategic Value of External Expertise

In an era marked by rapid technological disruption, geopolitical volatility, and socio-environmental change, strategic foresight has become essential for public institutions confronting growing complexity and uncertainty. Among the key factors influencing effective foresight, the systematic integration of external expertise stands out as particularly vital—greatly expanding an organisation’s cognitive capacity beyond its internal limits.

The engagement of external actors—such as academics, industry experts, futurists, science fiction writers, and civil society representatives—not only deepens analytical rigour but also challenges institutional assumptions and mitigates cognitive bias in long-term planning (Scoblic, 2020; Habegger, 2010). Incorporating diverse epistemic communities has been shown to improve the accuracy, creativity, and legitimacy of foresight outputs (Calof and Smith, 2012), enhancing their policy relevance and intellectual strength.

A particularly instructive example is offered by the USCG’s Evergreen programme, which systematically engaged external subject matter experts at multiple stages of scenario development. These contributors, drawn from academia, the private sector, and non-governmental organisations, collaborated in co-producing alternative futures grounded in the interplay between maritime security threats, climate dynamics, and global geopolitical shifts (USCG, 2019). This pluralistic, multi-stakeholder approach not only broadened the evidentiary base of foresight analysis but also provided organisational leaders with a more nuanced and adaptive repertoire of strategic options. Likewise, the EPA has institutionalised external collaboration within its foresight functions. By partnering with universities, think tanks, and non-profit organisations in conducting environmental scanning and long-term risk assessments, the agency has both refined the technical precision and reinforced the societal salience of its strategic guidance (EPA, 2016). Such approaches exemplify a growing consensus that foresight must be not only anticipatory but also inclusive and deliberative (Fuerth and Faber, 2012).

Beyond analytical enrichment, the iterative involvement of external stakeholders also fosters institutional learning and contributes to broader cultural transformation. By exposing internal actors to alternative worldviews and methodological frameworks, such collaboration catalyses the development of an organisational mindset that is more adaptive, reflexive, and receptive to disruptive change (Tully and Wintle, 2022). In this regard, the value of external engagement lies not only in improving foresight outputs but also in advancing the strategic maturity of the institution itself.

Yet, the effective operationalisation of external participation requires formal and sustained mechanisms. Episodic consultations or ad hoc workshops are rarely sufficient for achieving meaningful integration. More promising models include the establishment of permanent advisory panels, co-creative scenario labs, joint foresight hubs, and cross-sectoral secondments (OECD, 2019). The EU's Joint Research Centre, for instance, has pioneered co-creation platforms wherein policymakers and stakeholders engage in foresight-informed deliberation, thus enhancing both democratic legitimacy and policy responsiveness (European Commission, 2018).

In sum, the integration of external expertise is not a peripheral enhancement to strategic foresight—it is a structural imperative. As public institutions increasingly contend with non-linear risks and long-horizon uncertainties, the institutionalisation of collaborative foresight practices will prove essential to building strategies that are not only analytically sound, but socially resilient and politically robust.

7.1.5 Finding 3: Internal Staff Training for Institutional Foresight

Unlike the UK, which often relies on external experts to spearhead foresight activities, federal agencies in the US have increasingly emphasised the training and development of internal personnel as a foundational strategy for institutionalising foresight (Greenblott et al., 2018; Scoblic, 2020). This internal orientation seeks to equip individuals across organisational hierarchies with the competencies necessary to engage meaningfully in strategic foresight practices, thereby enabling long-term thinking and anticipatory governance from within.

Training programmes focused on practical tools—such as scenario planning, horizon scanning, and trend analysis—help embed foresight into daily operations. This not only increases the

chances of translating foresight outputs into actionable strategies but also cultivates a culture attuned to complexity and change (Habegger, 2010; Calof and Smith, 2012).

A notable example is the U.S. Army Futures Command, which integrates foresight training into strategic planning. This enables leaders and planners to identify emerging threats and opportunities, shaping long-term defence strategies beyond immediate operational concerns (Greenblott et al., 2018; U.S. Army Futures Command, 2021). Such integration enhances organisational agility in shifting geopolitical and technological contexts. The US Coast Guard's Evergreen programme similarly trains staff at all levels to anticipate future maritime challenges. A defining feature is its focus on breaking down silos—encouraging cross-departmental collaboration and shared understanding. Senior leaders set strategic priorities, mid-level managers develop implementation plans, and junior staff operationalise them, creating a feedback loop from strategy to execution (Ager et al., 2021; USCG, 2019). Other agencies have adopted similar initiatives. The Department of Homeland Security (DHS) includes foresight in its Leadership Development Programme, while the Environmental Protection Agency (EPA) trains staff to address complex environmental risks like climate change (DHS, 2022; EPA, 2016). These initiatives are supported by the FFCOI, an inter-agency network that facilitates the sharing of foresight tools and practices across the federal government (FFCOI, 2023).

In contrast, externally led foresight can offer specialised expertise but may limit internal staff involvement and reduce the relevance of outcomes to operational realities. Such recommendations often fail to capture the cultural and institutional contexts of implementing bodies, hindering adoption (Fuerth and Faber, 2012). While external input remains valuable, internal engagement is essential for institutional ownership and impact. The U.S. Department of Energy illustrates a hybrid approach, combining internal workshops with external scenario development to ensure foresight is both actionable and contextually grounded (DOE, 2021).

Despite progress, many agencies still lack formalised processes for embedding foresight into policymaking (Greenblott et al., 2018). Foresight units often produce valuable insights, yet these are frequently disconnected from institutional decision-making structures. Intelligence agencies, in particular, tend to generate foresight for external use, with limited internal application. Nonetheless, most federal bodies recognise foresight's value in strategic planning, resource allocation, and long-term policy development. The EPA, for example, uses foresight tools to integrate environmental considerations—especially for climate adaptation—into its policies. To maximise impact, however, foresight must evolve from a diagnostic tool to a fully integrated element of programme planning and governance.

Ultimately, internal staff development is not merely a support mechanism but a strategic lever for foresight institutionalisation. By cultivating foresight competencies across levels and linking them to operational planning, public organisations enhance their capacity to navigate uncertainty, align actions with future trajectories, and build long-term resilience.

7.1.6 Concluding Implications: A Three-Pillar Assessment: Mission, Evaluation, and Talent

In conclusion, the effective implementation of strategic foresight within the U.S. federal government is driven by the interplay of multiple complex factors. Each element plays a critical role, with the most salient including resource and budget allocation, leadership, external collaboration, internal training, and the need for both inter-agency connectivity and centralised coordination mechanisms.

First, the allocation of resources and funding constitutes the fundamental enabler of strategic foresight activities. Federal agencies must ensure the availability of adequate financial and material support to sustain foresight functions. Such investment facilitates long-term and comprehensive analysis, empowering the government to craft proactive policy responses to socio-economic, technological, and geopolitical changes. Given that foresight often spans across policy domains, funding should be directed towards generating long-term public value rather than short-term gains.

Second, leadership acts as the primary catalyst for advancing foresight practices. Senior officials must recognise the strategic importance of foresight and align it with the organisation's overarching mission. Effective leadership promotes institutional prioritisation of foresight activities and facilitates the translation of foresight-derived insights into policy-making. Moreover, leadership cultivates a culture in which foresight is perceived not as a peripheral task but as an indispensable long-term organisational endeavour.

Third, collaboration with external entities is essential to address multifaceted and interdependent challenges from a holistic perspective. Partnerships with private sector actors, academia, research institutes, and international organisations enhance the credibility and depth of foresight outputs. These partnerships enable federal institutions to adapt more rapidly to disruptive trends and align with global policy currents.

Fourth, internal training is vital to ensure the durability and sustainability of foresight capabilities. The dissemination of foresight literacy and expertise must extend beyond policy professionals to encompass the entire civil service. Training programmes enable staff to acquire critical competencies and analytic tools, heighten sensitivity to environmental shifts, and strengthen institutional agility and responsiveness.

Lastly, the establishment of inter-agency connectivity and centralised foresight coordination is necessary to ensure coherence and integration across government bodies. Rather than operating in isolation, agencies must be linked through a central coordinating entity that facilitates cross-departmental collaboration and strategic alignment. In an increasingly complex global landscape, such collaboration is indispensable to enhance the effectiveness and efficiency of foresight initiatives.

Notably, three core conditions identified through this study—(1) strong leadership, (2) institutionalised external collaboration, and (3) enhanced internal capacity—are integrally linked to the following three strategic pillars: Mission, Evaluation, and Talent. These pillars are not merely administrative categories but structural enablers of long-term adaptive capacity within government.

(1) Mission Alignment: Strategic Integration with Organisational Objectives

Foresight activities must be intrinsically aligned with the organisation's core mission and long-term strategy to yield meaningful outcomes. While adequate funding is indispensable, foresight must be embedded within the ongoing cycles of strategic planning, not confined to standalone forecasting projects. Agencies such as the USCG, FEMA, and VA exemplify models where leadership-led participation ensures that foresight efforts are directly connected to institutional priorities. These models illustrate how foresight outputs can be translated into actionable strategies, influencing policy formulation, budget planning, and workforce development across the organisation.

(2) Evaluation Embeddedness: Enhancing Feedback Loops and Policy Impact

Strategic foresight must extend beyond projection to become a dynamic process in which insights inform policy development and are subject to iterative refinement. Many federal agencies currently lack clearly defined procedures for integrating foresight outcomes into policy (Greenblott et al., 2018). Accordingly, the development of performance metrics,

institutional feedback loops, and mechanisms for cross-agency benchmarking is critical. Such a framework enables a virtuous cycle of foresight – implementation – evaluation – redesign, fostering continual organisational learning and adaptation.

(3) Talent Capacity and Organisational Learning: Building Enduring Foresight Competence

Internal staff capability is among the most decisive factors underpinning the viability and effectiveness of foresight activities. Programmes led by DHS, EPA, and USCG have demonstrated the value of internal capacity-building through dedicated training and knowledge-sharing networks such as the FFCOI. However, a federal-level foresight education framework remains underdeveloped. There is an urgent need for institutionalised professional development pathways, including tiered training modules, practitioner-led learning communities, inter-agency secondment schemes, and experimental foresight labs. These initiatives would embed strategic foresight not merely as a technical skill but as a habitual mode of thinking across the public sector.

Together, these three strategic pillars—Mission Alignment, Evaluation Embeddedness, and Talent Capacity—provide the structural foundation for embedding foresight as a durable capability within federal institutions. Through this framework, the U.S. federal government can strengthen its preparedness and resilience in an increasingly uncertain and complex future.

7.2 Strategic Foresight in the Legislative Branch

While academic and institutional attention to strategic foresight within the U.S. federal government has historically centred on executive agencies, the legislative branch has simultaneously pursued its own, albeit less examined, trajectory in embedding anticipatory capacities. During the latter half of the twentieth century, the US Congress undertook a number of institutional experiments—most notably the Congressional Research Service (CRS), the Congressional Clearinghouse on the Future (CCF), and the Congressional Institute for the Future (CIF)—designed to integrate long-term thinking into legislative deliberations. These bodies were conceived in response to growing geopolitical complexity and rapid technological change, with the aspiration of equipping lawmakers with the analytical tools necessary for long-range policy planning. Yet despite their initial promise, many of these initiatives faltered due to structural fragility and the constraints imposed by short-term political logics. Their

eventual discontinuation underscores the persistent difficulty of securing institutional continuity and sustained political commitment to foresight functions within a majoritarian democratic framework. Nevertheless, the epistemic and organisational legacies of CRS, CCF, and CIF remain deeply embedded in the conceptual underpinnings of current legislative foresight efforts.

In recent years, the GAO has reasserted itself as a central institutional actor in advancing strategic foresight within Congress. Long recognised for its audit and oversight role, GAO has substantially broadened its mandate to include the anticipatory assessment of long-term risks and opportunities. This transformation has been most clearly realised through the establishment of the Center for Strategic Foresight (CSF), which operates under the aegis of GAO's Strategic Planning and External Liaison (SPEL) team. The CSF functions not merely as a think tank or advisory body, but as a hub for embedding future-oriented thinking into the GAO's institutional strategy, planning cycles, and congressional engagements. In partnership with SPEL, the CSF develops foresight scenarios, convenes multi-sectoral expert panels, and supports the integration of long-range considerations into core GAO functions such as performance auditing, risk analysis, and policy evaluation.

In parallel, the FFCOI has emerged as a practitioner-led network that complements these formal institutional mechanisms. While FFCOI is not formally affiliated with Congress, its core membership—drawn predominantly from GAO, the Office of Personnel Management (OPM), and other federal agencies—maintains significant linkages to the legislative branch. The FFCOI operates as a horizontal knowledge-sharing platform, fostering peer-to-peer learning and cultivating a community of practice around strategic foresight in government. Its informal architecture offers a flexible space for experimentation, mutual capacity-building, and the diffusion of foresight methodologies across institutional boundaries.

Taken together, these developments mark a significant inflection point in the institutional evolution of strategic foresight within the U.S. legislature. This section traces that trajectory through three analytical layers: first, a retrospective examination of foundational congressional initiatives such as CRS, CCF, and CIF (Section 7.2.1); second, a contemporary analysis of foresight functions embedded within GAO and advanced through FFCOI (Section 7.2.2); and finally, a forward-looking assessment articulated through a three-pillar model encompassing Mission, Evaluation, and Talent (Section 7.2.3).

7.2.1 A Historical Overview of CRS, CCF, and CIF Initiatives

Given the inherent complexity and dynamism of legislative decision-making, it is imperative that legislators cultivate not only a nuanced understanding of present challenges but also a forward-looking perspective on emerging trends and long-term developments. In response to this imperative, the US Congress has, over time, established a series of institutional mechanisms aimed at strengthening its strategic foresight capacity and providing analytical insight into future-oriented policymaking.

Foremost among these is the CRS, established in 1914 with the principal aim of delivering non-partisan and in-depth research support to Members of Congress. Over the years, CRS has evolved to incorporate the identification of emerging issues and anticipatory analysis as core elements of its mission, thereby furnishing legislators with foundational intelligence for strategic planning and policy formulation.

In the 1970s, the establishment of the CCF marked a more explicit institutional attempt to embed foresight functions within the long-term planning processes of Congress. CCF sought to support legislators in systematically addressing future challenges by promoting futures thinking and long-range analysis.

Subsequently, the CIF emerged to provide expert-level foresight and strategic advisory services. Its objective was to inform legislative deliberations by interpreting the policy implications of rapid technological, social, and geopolitical change, thereby assisting lawmakers in navigating an increasingly complex world.

Together, these initiatives reflect early yet significant efforts to institutionalise futures thinking within the legislative branch. By enabling more anticipatory governance practices, they helped Congress to better anticipate risks, seize emerging opportunities, and formulate proactive responses. This section explores the historical development and activities of these three entities, highlighting their respective contributions to foresight capacity and informed decision-making within the US Congress.

7.2.1.1 Congressional Research Service (CRS)

Founded in 1914, the CRS was originally conceived as a non-partisan entity tasked with providing research and analytical support to Members of the US Congress. Initially focused on legislative referencing and factual clarification, CRS gradually expanded its scope in the mid-20th century, in response to the increasing complexity of policy environments and the proliferation of long-term uncertainties. This evolution marked a deliberate effort to incorporate forward-looking analysis into congressional advisory functions, thereby transcending the reactive nature of traditional legislative support.

A notable institutional milestone was the establishment of the FRG in the 1970s, which was expressly mandated to cultivate futures literacy among both congressional members and CRS analysts. The FRG championed methodological innovation by introducing scenario-building, interdisciplinary trend analysis, and ‘What if...?’ frameworks into the congressional research repertoire. These techniques enabled the structured anticipation of emerging issues and the systematic construction of alternative policy pathways. During the late 1970s and 1980s, the FRG played a vital role in embedding foresight practices within the legislative process, notably supporting the House Committee on Energy and Commerce in navigating issues relating to energy security, technological change, and environmental risk.

According to William H. Robinson, then Deputy Director of the Congressional Research Review (1990), the purpose of CRS’s foresight-related initiatives was to enable Congress to act preemptively in response to long-term societal challenges. He documented a forecasting exercise conducted in early 1989, wherein a congressional advisory group outlined key themes: the imperative for long-horizon decision-making, the increasing internationalisation of policy concerns, and the need for leadership that integrates interdisciplinary insights. These themes revealed a recognition within Congress that policy formulation must extend beyond electoral timeframes, engage with global megatrends, and transcend conventional bureaucratic silos.

The FRG also pioneered innovative knowledge management systems such as the Futures Information Retrieval System (FIRST), which appended a foresight classification schema to the Library of Congress. This not only facilitated strategic document retrieval but also created an institutional infrastructure for future-oriented policymaking. Despite initial resistance from traditional librarians, a compromise was reached between archival rigour and futures flexibility, exemplifying the potential for constructive epistemic integration.

Moreover, the FRG collaborated with Senate subcommittees such as the Subcommittee on Science, Technology, and Space (STS), chaired by Adlai Stevenson in the late 1970s. In

response to Stevenson's request for "innovative support", CRS developed three succinct alternative scenarios—"More of the Same", "Pick Your Disaster", and "Cooperative Change"—which helped lawmakers clarify their assumptions and identify cross-cutting priorities. The methodological success of this initiative informed the Joint Economic Committee's 1980 project *Developing a Dynamic Nation*, which reviewed two decades of technological innovation and offered strategic pathways for the next thirty years. While political turnover ultimately limited the uptake of the findings, these cases demonstrated that foresight techniques could indeed be pragmatically employed in politically charged environments.

In sum, the contributions of CRS—and particularly the FRG—established a foundational model for integrating strategic foresight into legislative deliberations. Although constrained in scope and sustainability, these initiatives remain instructive precedents for contemporary efforts to institutionalise anticipatory governance in the legislative branch of the U.S. government.

7.2.1.2 Congressional Clearinghouse on the Future (CCF)

Alongside the institutional and professional foresight endeavours driven by the CRS and the FRG, the US Congress also witnessed a parallel trajectory in which lawmakers themselves initiated efforts to embed long-term thinking into legislative discourse. Among the most salient manifestations of this bottom-up movement was the establishment of the CCF in 1976. Conceived by approximately thirty members from both chambers and across party lines, the CCF sought to cultivate a strategic foresight culture that extended beyond the confines of formal research institutions.

Unlike the CRS or FRG, which operated within formalised bureaucratic mandates, the CCF represented a voluntary and cross-partisan coalition that actively pursued anticipatory governance through dialogue, experimentation, and outreach. Its formation reflected a growing recognition among legislators of the need to transcend short-termism and engage with the structural transformations posed by global demographic shifts, technological upheavals, and emerging social dynamics. The CCF endeavoured to democratise foresight within Congress by organising thematic briefings, knowledge-sharing forums, and high-profile events such as the Futures Fairs, which convened leading futurists, scientists, and policy practitioners—including Herman Kahn, Margaret Mead, and Buckminster Fuller.

Crucially, these engagements were often framed by the normative lens of “anticipatory democracy”, a concept advanced by Alvin Toffler, which promoted broader citizen involvement, institutional peripheral vision, and a deliberative approach to long-range governance. The CCF, while unofficial, performed quasi-institutional functions akin to a legislative service organisation (LSO), enabling members to reflect on future contingencies outside the immediate pressures of electoral politics and appropriations cycles.

The CCF’s practical impact was evident in its attempt to embed foresight into the legislative agenda-setting process. Through the Global Foresight Roundtable held in the early 1980s, the CCF advanced a suite of legislative initiatives including: (1) the Critical Trends Assessment Act, advocating for an executive branch entity dedicated to trend monitoring and strategic planning; (2) the Global Resources, Environment and Population Act, promoting interagency coordination on macro-level systemic risks; and (3) the Cost-Conscious Congress Initiative, which aimed to institutionalise key findings from the Carter Administration’s Global 2000 Report. While none of these proposals were enacted, their development marked an ambitious attempt to codify long-range thinking into federal legislative structures.

In parallel, the CCF invited House committees to forecast major issues anticipated over the coming decade, thereby experimenting with a nascent model of prospective agenda-setting. Although implementation was delayed due to procedural inertia, the initiative underscored the feasibility of integrating foresight into Congressional routines historically dominated by reactive governance.

The dissolution of the CCF in 1994 followed the imposition of new regulatory constraints on LSOs, including prohibitions on private donations, stringent fiscal oversight, and limitations on administrative expenditure. These reforms rendered the flexible, network-based model of the CCF administratively untenable. Yet its legacy endured—not only in the informal networks it seeded but also in the cultural shift it catalysed within Congress. By reframing legislative responsibilities through a future-oriented lens, the CCF instilled a disposition of anticipatory governance that persisted in subsequent foresight initiatives.

As Congressman Bob Edgar, then Chair of the CCF, remarked in 1986, the organisation functioned as “a bipartisan, bicameral legislative service agency through which 100 Democratic and Republican members of Congress, both House and Senate, shared ideas and formed alliances based on future forecasting.” This articulation encapsulated the CCF’s ethos

as a forward-looking platform unbounded by partisanship or regionalism—attributes which, paradoxically, also limited its institutional durability.

In sum, the CCF's contribution to the evolution of strategic foresight in the U.S. legislative branch lies not only in its experimental designs but also in its normative ambition: to imagine governance not merely as a reaction to present imperatives, but as a proactive engagement with the uncertain contours of societal transformation. The CCF exemplified a model of foresight governance that was pluralistic, deliberative, and structurally open—an approach that remains salient in an era increasingly defined by complex, interdependent global risks. Its experience affirms the necessity of cultivating long-term orientation within legislatures, reinforcing the value of sustained foresight capacity as a democratic asset.

7.2.1.3 The Congressional Institute for the Future (CIF)

While the CCF marked a significant step towards institutionalising long-term thinking within the US Congress, its ultimate dissolution in the wake of regulatory tightening underscored the structural limitations of embedding foresight solely within official legislative frameworks. In response to these constraints, the CIF was established in 1979 as an independent, non-governmental organisation. Designed to preserve and expand upon the foresight ethos initiated by the CCF, CIF sought to provide a more flexible and sustainable platform for strategic foresight, one unencumbered by the procedural and funding restrictions facing legislative service organisations.

Structured as a non-profit entity, CIF operated at arm's length from both Congress and the Executive, thereby ensuring its analytical independence. This autonomy enabled it to engage in long-range policy thinking, scenario development, and anticipatory risk analysis beyond the confines of electoral cycles and partisan exigencies. As Bob Edgar (1980), former Chairman of the CCF, observed, CIF extended the foresight functions of CCF not only to Congressional actors but also to corporate leaders and civil society decision-makers, thereby embedding foresight capacity across sectors and policy domains.

At its core, CIF's mission lay in advancing systemic awareness of socio-technological transformation, environmental change, and emerging governance challenges. Its role was not merely informative but strategic: to equip both policymakers and the public with anticipatory intelligence, pre-policy scenario frameworks, and early warning mechanisms. In this regard,

CIF was not a think tank in the conventional sense, but rather a catalyst for institutional learning and policy innovation.

CIF's effectiveness was particularly enhanced through its collaboration with the Office of Technology Assessment (OTA), which from 1973 until its closure in 1995, served as Congress's primary conduit for analysing the societal impacts of emerging technologies. While OTA brought technical rigour to technology appraisal, CIF contributed broader contextual foresight, offering interdisciplinary scenarios on issues such as digital inequality, climate risk, and demographic shifts. This partnership exemplified a hybrid foresight model wherein technocratic analysis and social futures co-evolved, enriching the deliberative capacity of Congress.

A prominent example of this collaboration is evident in OTA's 1985 report *Information Technology and Its Impact on Society*, wherein CIF supplied forward-looking scenarios concerning the long-term consequences of the digital divide and educational stratification. These perspectives encouraged Congress to approach digital policy not merely as a technological issue but as one with deep social equity implications. Similarly, in energy and environmental policy, CIF provided foresight inputs on global resource volatility and sustainability transitions, which informed subsequent Congressional dialogues on climate and energy strategy.

Although both OTA and CIF ceased operations by the end of the 1990s—OTA in 1995 and CIF in 1999—their foresight methodologies and governance innovations continue to resonate. CIF, in particular, left an enduring legacy by demonstrating that independent foresight platforms could serve as credible, long-term support systems for public policy. Contemporary bodies such as the GAO and the FFCOI have drawn on this legacy, integrating anticipatory approaches into the broader architecture of federal governance.

Importantly, CIF's institutional model illustrates the viability of a foresight system that operates beyond the bounds of legislative formalism, yet maintains functional linkages with public decision-making. Its multi-stakeholder, cross-sectoral engagement—from academia to civil society and private industry—foreshadowed the emergence of what might now be termed a distributed foresight ecosystem. By fostering dialogue across policy, research, and practice communities, CIF contributed to a cultural shift in how long-term change is perceived and managed in the policy arena.

CIF's discontinuation was ultimately precipitated by financial and organisational constraints rather than conceptual limitations. Its achievements underscore three enduring insights for the design of future-oriented policy institutions. First, the necessity of external foresight capacity that can complement internal government mechanisms; second, the strategic utility of a public-private foresight interface in addressing complex systemic challenges; and third, the imperative of embedding anticipatory governance structures—such as early warning systems and long-term scenario planning—into policy formulation processes.

In conclusion, the CIF should not be interpreted as a failed experiment, but rather as a pioneering initiative that demonstrated the strategic potential of independent, non-partisan foresight. Its contributions laid vital groundwork for subsequent innovations in foresight governance, both within and beyond the legislative sphere, and serve as a reminder that enduring institutional resilience depends upon the ability to anticipate, not merely respond to, the future.

7.2.1.4 Implications of CRS, CCF, and CIF Initiatives

The trajectory of strategic foresight within the US Congress has not been a linear or uniform process. Rather, it has been characterised by a constellation of institutional experiments, each representing different modalities and degrees of integration into the legislative process. The three initiatives explored—namely, the CRS, the CCF, and the CIF—embody complementary yet distinct approaches to embedding long-term thinking within the legislative ecosystem. Together, they provide critical insights into the institutionalisation of foresight capacity in parliamentary settings.

First, the CRS represents a paradigmatic case of formal institutionalisation from within. Through the establishment of its FRG, CRS sought to internalise foresight methodologies—such as scenario planning, horizon scanning, and “What if...” analyses—within its research support structure. The FRG's contribution extended beyond analytical capacity-building; it facilitated the application of long-range foresight to policy domains such as energy, technological innovation, and socio-economic transformation, thereby anchoring anticipatory thinking within key congressional committees. As such, CRS demonstrates how internal foresight units, when structurally embedded, can serve as engines of future-oriented policy development.

Second, the CCF exemplifies a bottom-up, member-led initiative to transcend institutional constraints and inject futures thinking directly into the legislative discourse. Formed by a bipartisan coalition of legislators, the CCF created a deliberative space for long-term reflection through futures fairs and cross-sectoral dialogue. Its emphasis on anticipatory democracy and proactive agenda-setting provided a rare, norm-breaking model in a system otherwise dominated by short-termism and electoral imperatives. The CCF was, in effect, a political innovation: not a research unit, but a platform for political imagination.

Third, the CIF illustrated a hybrid model of strategic foresight situated outside the formal structures of Congress. Operating as an independent non-profit, it was freed from public funding constraints and partisan capture. Its role as a foresight intermediary—bridging insights from think tanks, academia, and government bodies such as the OTA—demonstrates the value of extra-parliamentary foresight institutions. CIF contributed not only to early warning and scenario-building exercises, but also to the cultivation of a broader strategic culture through its collaborations and anticipatory policy framing.

These cases collectively reveal a number of cross-cutting insights:

- The dual need for institutional embedding and operational flexibility: While CRS highlights the value of formal integration within the legislative apparatus, it also demonstrates the limitations imposed by political neutrality mandates and bureaucratic inertia. In contrast, the agility of CCF and CIF underscores the value of informal or hybrid foresight structures in navigating political volatility.
- The critical role of legislative leadership: The formation and activities of CCF affirm that strategic foresight is not merely a technocratic function but a political practice. Legislative champions who recognise the structural nature of emerging challenges can mobilise futures thinking as a mode of governance innovation.
- The importance of external, independent foresight ecosystems: CIF's work suggests that foresight does not need to reside exclusively within the state apparatus. Indeed, it may flourish more effectively when institutional independence and cross-sectoral collaboration are structurally enabled. Its partnerships with the OTA and other agencies highlight the significance of integrated foresight across policy domains.

- Inter-institutional coordination as a driver of systemic foresight: Rather than viewing these three initiatives as isolated episodes, their sequential and, at times, overlapping operations indicate the potential for a distributed foresight ecology. Such an ecology would consist of internally embedded, politically driven, and externally supported foresight mechanisms operating in concert.

Taken together, the CRS, CCF, and CIF initiatives offer a cumulative legacy that remains instructive for contemporary foresight system design. As global risks grow in complexity and intensity, legislative bodies must move beyond episodic forecasting and embrace a more robust, pluralistic model of foresight governance. A future-proof legislature will require not only data and techniques, but also political will, institutional agility, and the capacity to convene diverse epistemic communities.

Ultimately, these historical experiments suggest the viability of a hybrid foresight infrastructure that bridges institutional silos, navigates political dynamics, and links short-term responsiveness with long-term strategic vision. This model is not only pertinent for the US but holds broader relevance for any democratic system seeking to enhance its anticipatory capacity in an era of uncertainty and transformation.

7.2.2 The State of Strategic Foresight Function within the U.S. Legislature

In the latter half of the twentieth century, the US Congress embarked upon several institutional experiments aimed at embedding long-term thinking into legislative processes. These included the establishment of the CRS, the CCF, and the CIF. Despite their early promise, these initiatives were ultimately dismantled, ushering in a period of institutional dormancy with respect to strategic foresight within the legislative branch. This regression, exacerbated by intensifying political uncertainty and a renewed emphasis on short-term policy imperatives, created a structural vacuum that significantly weakened the legislature's anticipatory policy design capabilities.

However, the twenty-first century has seen a revival of interest in foresight-driven governance, spurred by increasing global interdependence, the rise of complex systemic risks, and an enhanced awareness of the necessity for anticipatory capacity within democratic institutions. In this evolving landscape, the GAO and the FFCOI have emerged as central actors in the

reconstruction and advancement of a strategic foresight ecosystem within the legislative context.

Traditionally known for its auditing and oversight functions, the GAO has, since the early 2000s, begun to formalise its strategic foresight capabilities. Through its Science, Technology Assessment, and Analytics (STAA) team, the GAO has institutionalised forward-looking practices such as structural risk diagnostics, scenario analysis, and the development of early warning systems for emerging policy challenges (GAO, 2022). In contrast, the FFCOI operates as a decentralised learning network composed of foresight practitioners dispersed across the federal government. Rather than adhering to hierarchical command structures, the FFCOI cultivates a peer-based community of practice that fosters the diffusion of anticipatory competencies and long-term planning skills across institutional boundaries.

Together, these two initiatives represent complementary pathways for the reintegration of strategic foresight into U.S. governance. While GAO exemplifies a formalised, top-down model of institutional foresight, FFCOI demonstrates the potential of a bottom-up, practitioner-led ecosystem rooted in collaborative learning and distributed expertise. Despite their divergent organisational architectures, both GAO and FFCOI signal a decisive departure from the fragmented and experimental foresight endeavours of the past, instead pointing towards a more embedded and systemic approach to anticipatory governance.

This section explores the institutional design, operational structures, and practical contributions of GAO and FFCOI, tracing how each has contributed to the re-establishment of strategic foresight capacity within the U.S. legislature. In doing so, it seeks to elucidate the broader implications for building resilient, future-oriented governance systems in democratic politics.

7.2.2.1 The Government Accountability Office (GAO)

The US GAO, traditionally renowned for its role in post-audit and fiscal oversight, has evolved into a pivotal institutional actor in the development of strategic foresight within the legislative branch. While the GAO's core mandate initially concentrated on retrospective performance evaluation, the increasing volatility and interdependence of policy challenges in the 21st century—exemplified by terrorist threats, economic crises, and climate instability—have necessitated a shift towards anticipatory governance.

In response, the GAO began embedding strategic foresight into its internal architecture during the mid-2000s, gradually transforming itself from a reactive oversight body into a future-oriented policy institution. This foresight function operates across three primary dimensions: (1) the identification and articulation of long-term structural risks across federal programmes; (2) the application of scenario-based simulations to illuminate trade-offs and policy alternatives; and (3) the diffusion of foresight capabilities across the federal landscape through institutional learning and coordination frameworks (GAO, 2022a; 2023a).

A cornerstone of this transformation was the establishment of the Center for Strategic Foresight (CSF) in 2018, situated within the GAO’s Strategic Planning and External Liaison (SPEL) team. The CSF was created not merely as an analytic unit but as a catalytic platform designed to integrate foresight into the GAO’s strategic planning cycles. By working in tandem with the SPEL division, the CSF plays a dual role—both advancing horizon scanning and anticipatory analysis, and embedding these insights into GAO’s medium- and long-term strategic goals.

The CSF conducts foresight assessments on a wide array of global megatrends, including digital transformation, global health, supply chain resilience, and democratic erosion. It further convenes a prestigious group of Foresight Fellows—comprising leading scholars, futurists, and interdisciplinary practitioners—to inject pluralistic and critical perspectives into GAO’s strategic deliberations. These external engagements are orchestrated in close coordination with SPEL, which oversees the GAO’s multi-year strategic planning process, stakeholder engagement, and institutional priority-setting. The synergy between CSF’s forward-looking intelligence and SPEL’s operational planning ensures that foresight is not siloed but instead informs budget formulation, audit planning, and legislative briefings.

This foresight infrastructure was notably instrumental in shaping the GAO Strategic Plan 2022–2027, which explicitly incorporated foresight-derived themes such as the future of work, demographic transformation, and resilience against systemic shocks. Furthermore, the CSF plays an educational role by disseminating foresight methodologies throughout the agency, offering internal workshops, guidance documents, and cross-divisional collaboration opportunities. This has fostered an organisational culture attuned to long-term thinking and resilience building.

Despite its statutory affiliation with the legislative branch, the GAO exercises oversight authority that spans the executive apparatus, rendering its foresight role especially consequential. As a “future-oriented policy watchdog,” the GAO provides critical anticipatory

intelligence to Congressional committees, thereby expanding the policy imagination of legislators beyond electoral timeframes. Its work, underpinned by the CSF-SPEL synergy, serves as a model for how institutional foresight can be structurally embedded and operationalised within the architecture of democratic governance.

In sum, the GAO exemplifies the institutionalisation of strategic foresight in legislative support agencies. Its unique positioning—analytically independent yet strategically embedded—demonstrates the capacity of foresight to serve as both a cognitive and procedural asset in modern public policy. Far from being a peripheral concern, foresight at the GAO constitutes a central pillar of anticipatory governance in the U.S. legislative system.

7.2.2.2 Federal Foresight Community of Interest (FFCOI)

The FFCOI emerged in 2012 as a voluntary, decentralised network of foresight practitioners, policy analysts, and strategic planners situated both within and outside the US federal government. Unlike traditional foresight bodies anchored in specific institutional mandates, the FFCOI operates as an informal, cross-agency platform dedicated to disseminating foresight methodologies and cultivating a culture of anticipatory governance. Rather than producing one-off reports, FFCOI endeavours to embed foresight within a wider architecture of “learning-based governance” across the public sector.

The FFCOI does not function through a formal command hierarchy; instead, it constitutes a horizontal knowledge-sharing network that enables dispersed practitioners across federal agencies to collaborate. This structure echoes Schwartz’s (1996) proposition that foresight should not be confined to elite technocratic circles but should instead evolve through inclusive dialogue within organisations. The FFCOI thus serves as a practice-oriented epistemic community rather than a bureaucratic organ, facilitating the diffusion of strategic foresight culture beyond institutional inertia.

Its membership spans core federal institutions such as the GAO, the Office of Management and Budget (OMB), NASA, the DHS, and the DOE, while also incorporating stakeholders from local governments, academia, and private think tanks. This pluralistic composition underpins its capacity to foster cross-sectoral convergence and epistemic integration.

FFCOI’s activities can be categorised into three principal dimensions. First, it promotes methodological pluralism through regular forums, practitioner workshops, and thematic

foresight conferences. These gatherings serve as incubators for both conventional techniques (e.g., scenario planning, trend analysis, horizon scanning, and systems thinking) and emerging approaches, including machine learning-based predictive models, digital twin simulations, and futures-oriented data analytics—methodologies aligned with the evolving toolkit of technology-enabled foresight (Miller et al., 2018; Mandel et al., 2020).

Second, the FFCOI has formulated a “science-based foresight model” which attempts to integrate technological innovation with anticipatory policy development. This model seeks to harmonise quantitative, model-based forecasting with scenario-driven imagination, thus bridging Popper’s (2008) foresight diamond and Tonkens and Hajer’s (2020) emphasis on science-policy interface. It represents a hybridised framework for foresight praxis at the nexus of empirical data and normative policy design.

Third, and perhaps most critically, the FFCOI contributes to the ‘dispersed alignment’ of foresight across federal entities, functioning as an enabler of strategic coherence in an otherwise fragmented administrative landscape. In so doing, it supports the institutionalisation of foresight as a distributed capability—a networked asset embedded within, but not limited to, departmental structures (GAO, 2020).

Importantly, the FFCOI’s interaction with the GAO exemplifies its connective potential. While the FFCOI is not formally nested within the legislative branch, many of its members consult on GAO foresight reports or provide access to proprietary trend analyses and technological forecasts. Such collaborations help position the FFCOI as a functional bridge between executive foresight operations and legislative agenda-setting, thereby reinforcing its strategic relevance (Carter and Goldman, 2021).

Nevertheless, the FFCOI’s informality imposes certain limitations. Its lack of formal legal status or dedicated funding makes it susceptible to institutional volatility and budgetary constraints. Additionally, its absence from top-tier decision-making circuits may limit its practical influence, raising concerns that its efforts may remain largely experimental and marginal to core policy processes. This structural precarity, however, simultaneously allows it to operate as a vanguard of bottom-up foresight innovation, consistent with Scharmer’s (2007) Theory U, which foregrounds emergent change from the periphery.

In conclusion, the FFCOI stands as one of the most innovative platforms within the U.S. strategic planning ecosystem. It offers a compelling example of how foresight can function not merely as an analytical tool but as a dynamic, networked governance process. By prioritising

practitioner-led learning, technology-policy integration, and inter-agency collaboration, the FFCOI exemplifies the democratic ideals of futures research articulated by Cuhls (2021). Through its multi-pillar approach, it has played a formative role in advancing an anticipatory culture of governance and fostering an ecosystemic model of strategic foresight in the federal domain.

7.2.2.3 Concluding Implications: The Case of GAO and FFCOI

Within the institutionalisation of strategic foresight in the US, the GAO and the FFCOI have played complementary roles, following distinct institutional pathways and structural models. GAO has established a formalised institutional base for addressing long-term structural risks, while FFCOI has contributed to the diffusion of foresight culture and long-range thinking across government through a practitioner-led learning community.

GAO has evolved beyond its traditional auditing and evaluation functions by institutionalising its strategic analytical capabilities. In particular, through its collaboration with the CSF and the Strategic Planning and External Liaison (SPEL) team, GAO integrates future-oriented scenario analysis into policy drafting and performs anticipatory policy coordination. In doing so, it has redefined its role from a retrospective audit institution to a central agency responsible for early warning systems and long-term strategic planning in response to structural transformation.

In contrast, FFCOI operates as a decentralised, non-institutionalised network of foresight practitioners from various federal agencies and external organisations. It fosters a horizontal learning ecosystem where methods such as forecasting, scenario planning, and systems thinking are collaboratively explored and applied. Although it lacks formal budgetary authority or legal status, FFCOI embodies a new model of strategic learning that transcends the limitations of hierarchical command structures through peer-based collaboration and knowledge exchange.

The experiences of these two bodies yield three key cross-cutting implications:

- **An Integrative Strategy of Institutionalisation and Learning Ecosystems**
While GAO ensures the institutional permanence of strategic foresight through its statutory authority and budgetary stability, FFCOI advances the cultural embedding of

anticipatory thinking via a practitioner-driven horizontal learning environment. These divergent approaches underscore the necessity of concurrently pursuing both formal institutionalisation and cultural internalisation to embed foresight in governance.

- Strategic Linkages Between Formality and Informality

Although FFCOI's analytical outputs are not formally integrated into GAO reports through structured mechanisms, informal collaboration and data sharing between the two entities contribute substantively to the institutional diffusion of foresight practices and the enhancement of flexibility within policy design processes. This dynamic interaction highlights the strategic value of informal engagements in complementing formal policy development.

- The Importance of Ecosystem-Based Models for Future Readiness

The CSF and SPEL within GAO, alongside the practitioner community of FFCOI, contribute to enhancing the future fitness of public policy from distinct but complementary positions. These configurations point to the indispensability of multi-layered networks and feedback mechanisms in navigating increasingly complex and overlapping risk environments—conditions to which no single organisation can adequately respond alone.

In sum, the dual-track approach of GAO and FFCOI demonstrates that strategic foresight can function as an enduring institutional capability resistant to short-term policy pressures. Moreover, they represent experimental models through which long-term thinking is not only institutionalised but cultivated as a sustainable and multi-dimensional cultural norm within public policymaking. Their contributions affirm the need for hybrid foresight architectures that combine formal authority with practitioner-led innovation.

7.2.3 Concluding Implications: A Three-Pillar Assessment — Mission, Evaluation, and Talent

The institutionalisation of strategic foresight within the US Congress has been neither linear nor uniform. Instead, it has unfolded through a mosaic of organisational innovations and practitioner-led learning mechanisms, each contributing uniquely to the diffusion of anticipatory capacity across the legislative domain. The CRS, the CCF, and the CIF, together with the GAO and the FFCOI, represent a composite architecture of foresight experimentation.

Collectively, they reveal that strategic foresight is not merely an analytical technique but a systemic cultural and institutional function that must be embedded across multiple layers of governance.

The experiences of these initiatives suggest that foresight institutionalisation must be addressed along three mutually reinforcing dimensions: mission alignment, embedded evaluation, and talent capacity.

(1) Mission Alignment: Strategic Integration with Organisational Objectives

For foresight to function sustainably within governance systems, it must be strategically aligned with the core mission of each organisation. The CRS exemplifies formal institutionalisation from within, integrating futures methodologies through its internal Futures Research Group, thereby harmonising anticipatory capacity with its legislative support remit. GAO, too, has extended its traditional auditing role to include long-term strategic policy coordination via the Centre for Strategic Foresight (CSF) and the Strategic Planning and External Liaison (SPEL) unit, thus reinforcing its position as a central node in anticipatory governance.

By contrast, CIF, operating as an independent non-profit outside the formal structures of Congress, enabled foresight experimentation untethered from bureaucratic mandates. Similarly, FFCOI, as a decentralised and non-hierarchical network, diffuses foresight thinking across multiple agencies without the constraints of formal mission specificity. Taken together, these cases illustrate that mission alignment—whether internal or externally leveraged—is indispensable for embedding foresight as a durable function of public administration.

(2) Evaluation Embeddedness: Enhancing Feedback Loops and Policy Impact

Strategic foresight must transcend episodic forecasting to become an intrinsic, iterative process of policy reflection and learning. CRS achieved this through scenario exercises and "What if" analyses applied to critical domains such as energy and technological innovation. CIF operated as an anticipatory interlocutor, bridging think tanks and academia to introduce long-range scenario thinking into public discourse.

GAO has institutionalised forward-looking evaluation by incorporating foresight analysis into congressional briefings and simulations, thus transforming its evaluative role from reactive oversight to proactive strategic guidance. FFCOI complements this approach by cultivating a practitioner ecosystem where methods such as systems thinking, horizon scanning, and simulation modelling are regularly exchanged and adapted. These practices signal the imperative for foresight to be embedded not only in policy content but also in the epistemologies and routines of governance.

(3) Talent Capacity and Organisational Learning: Building Enduring Foresight Competence

The sustainability of foresight hinges upon the availability and continual development of human capital. CRS and GAO exemplify the formal embedding of analytical expertise within institutional structures, while CIF strategically mobilised external networks and subject-matter experts. GAO's CSF and SPEL units exemplify how a dedicated internal talent base can anchor institutional foresight in both substance and structure.

FFCOI, though lacking a formal mandate or budget, has nonetheless fostered a vibrant community of practice where foresight knowledge is co-produced, exchanged, and circulated among peers across federal agencies. CCF's parliamentarian-led engagements further illustrate the political agency required to embed foresight into legislative imagination. These varied configurations underscore that sustainable foresight ecosystems demand both structured talent pipelines and flexible, practitioner-led learning environments.

Taken collectively, these cases do not represent isolated or sequential episodes but rather components of a multi-layered foresight ecosystem within the legislative context. Their mutual reinforcement demonstrates that effective foresight governance is predicated upon a balance of formal authority and informal innovation; top-down institutional infrastructure and bottom-up cultural entrenchment. The dual-track approach exemplified by GAO and FFCOI, in particular, affirms that strategic foresight can be institutionalised not only as an enduring organisational capability but also as a cross-cutting cultural norm. Moreover, the cumulative legacy of CRS, CCF, and CIF points to the viability of hybrid foresight architectures that bridge institutional silos, mobilise political agency, and foster inter-organisational reflexivity. Ultimately, this three-pillar model — aligning foresight with organisational missions, embedding it in evaluative routines, and cultivating the requisite talent — offers a replicable blueprint for

embedding anticipatory governance within democratic systems. It is only through such integrated and resilient ecosystems that legislative bodies can hope to navigate the accelerating complexity and uncertainty of the 21st century.

7.3 Strategic Foresight in the State Government

While the institutionalisation of strategic foresight has garnered significant attention at the federal level of the US government, less scholarly and policy focus has been afforded to the parallel evolution of foresight practices within state-level governance. Yet, as loci of policy innovation and frontline service delivery, state governments have increasingly emerged as important arenas for anticipatory governance. Faced with complex challenges—ranging from climate resilience and public health to technological disruption and demographic shifts—several states have undertaken notable efforts to embed foresight into their administrative and policymaking frameworks.

This section seeks to systematically examine the development, variation, and institutional dynamics of strategic foresight within the subnational context of U.S. state governments. It begins with an overview of foresight activities across multiple states, identifying common modalities and distinctive innovations (Section 7.3.1). It then presents in-depth case studies of selected state-level foresight initiatives, highlighting the mechanisms, actors, and institutional environments that have shaped their emergence and impact. This is followed by a comparative analysis contrasting state-level and federal foresight approaches, drawing attention to key differences in scale, flexibility, and institutional embeddedness (Section 7.3.2). Finally, the concluding section synthesises these findings through a three-pillar assessment—Mission, Evaluation, and Talent—to distil the broader implications for the diffusion and sustainability of strategic foresight within multi-level governance systems (Section 7.3.3).

In exploring how foresight is operationalised at the state level, this chapter not only expands the analytical scope of foresight governance in the US but also offers critical insights into how subnational actors contribute to building anticipatory capacity in the face of growing uncertainty and systemic complexity.

7.3.1 Foresight Activities of State Governments

In the evolving landscape of anticipatory governance within the US, state governments have increasingly assumed a proactive role in deploying strategic foresight as both a methodological and institutional response to long-term societal challenges. While much scholarly and policy attention has been directed towards federal-level foresight infrastructures, the subnational arena—characterised by jurisdictional agility, proximity to constituents, and policy innovation—has witnessed the emergence of diverse and often pioneering foresight initiatives.

This section explores the foresight activities of state governments, examining the modalities through which long-term thinking has been operationalised within state-level governance frameworks. In contrast to the federal model, where strategic foresight is frequently embedded within formal bureaucratic structures, state-level initiatives tend to reflect a greater degree of methodological plurality and contextual specificity. These initiatives vary not only in institutional form—ranging from university-affiliated research centres to executive planning boards—but also in their epistemological orientation, ranging from participatory scenario-building to performance benchmarking and systems modelling.

By examining four emblematic cases, this subsection seeks to illustrate the heterogeneity of strategic foresight practices across American states and to draw attention to the mechanisms through which such practices influence long-term public policy:

- Section 7.3.1.1 focuses on the Hawaii Research Center for Futures Studies, the first formally institutionalised futures studies entity at the state level, which pioneered scenario planning and backcasting in partnership with public agencies.
- Section 7.3.1.2 examines Oregon’s benchmark-based governance model, where strategic foresight is embedded within a long-term planning and performance evaluation system, directly linked to the state’s fiscal architecture.
- Section 7.3.1.3 presents Minnesota’s Open Enrolment Policy as an early foresight-driven response to demographic and systemic inequities in education, embodying principles of anticipatory reform and structural experimentation.
- Section 7.3.1.4 analyses the California 2025 Project, an interdisciplinary and cross-sector foresight initiative that integrated climate resilience, urban planning, and infrastructure policy through scenario-based design.

Taken together, these cases demonstrate the capacity of state governments to act as strategic laboratories for foresight innovation. They further underscore the necessity of embedding anticipatory governance not only within centralised state institutions but also across networks of academic, civil, and inter-agency collaboration. In doing so, they provide valuable precedents for the broader institutionalisation of foresight practice across multilevel governance systems.

7.3.1.1 The Hawaii Futures Research Centre

In the early 1970s, amidst rapid socio-economic transformations, the State of Hawaii sought to institutionalise a systematic approach to understanding and responding to the increasing complexity and uncertainty facing its communities. It was within this historical context that the Hawaii Research Center for Futures Studies (HRFS) was established in 1971 under the leadership of Professor Jim Dator at the University of Hawaii at Manoa. As the first officially recognised futures studies institution at the state level within the US, HRFS emerged as a trailblazer in linking scholarly inquiry with public policy development—imbuing its work with both academic rigour and policy relevance.

From its inception, HRFS eschewed simplistic forecasting models in favour of more participatory and multidimensional methodologies, most notably scenario planning and backcasting. These methods, considered avant-garde at the time, allowed the Centre to conceptualise the future not as a linear trajectory, but as a plurality of possible developments—thus enhancing the adaptive capacity and flexibility of policy design processes. The Centre's commitment to inclusive foresight frameworks enabled it to contribute substantively to policy formulation across various domains, including education reform, sustainable energy transitions, tourism policy, and ageing population strategies.

One of HRFS's most emblematic contributions is the Hawaii 2050 Sustainability Plan, a comprehensive vision-setting and planning initiative targeting the mid-21st century. HRFS played a central role in shaping the methodology and advisory framework for the project, which addressed not only environmental concerns but also integrated strategic approaches to climate resilience, resource circularity, food sovereignty, equitable education, energy transitions, and social equity. Notably, through the utilisation of backcasting, the Centre assisted in articulating a preferred vision of Hawaii in 2050 and reverse-engineered the requisite policy turning points

and implementation strategies to operationalise this vision. The result was a pragmatic yet visionary strategic roadmap grounded in both empirical evidence and participatory insight.

HRFS's influence has extended beyond Hawaii, garnering recognition within the international foresight community as a model of both theoretical innovation and applied practice. Particularly influential is Professor Dator's 'Four Futures' typology—growth, collapse, discipline, and transformation—which has become a foundational framework in public policy scenario design. Hawaii's practical application of this theory stands as a compelling demonstration of its utility in real-world governance settings.

In essence, the HRFS exemplifies how strategic foresight can serve as a conduit for knowledge circulation between academia and the mechanisms of policy execution. Its endeavours underscore the evolving role of foresight not merely as a tool for anticipation but as a participatory governance model aimed at co-creating the future. The Hawaiian experience offers critical insights into how regionally grounded foresight practices may secure institutional sustainability, enhance public legitimacy, and reinforce practical relevance—thereby serving as a valuable referential model for other states in the U.S. and the wider international community.

7.3.1.2 Oregon's Long-Term Planning and Benchmark-Based Governance

In the late 1980s, amid broader trends of fiscal austerity and incremental devolution in the US, many state governments began recognising the need for greater policy autonomy and accountability. Within this context, Oregon emerged as a pioneer, launching an integrated effort to institutionalise long-term strategic planning and performance-based policy evaluation. This culminated in the 1989 release of *Oregon Shines*, a landmark strategic vision document, and the establishment of Oregon Benchmarks, a quantitative performance measurement system designed to track progress towards stated goals.

Oregon Shines articulated a 20- to 30-year vision for the state, encompassing aspirational and futures-oriented objectives across critical sectors such as education, the economy, and the environment. What distinguished this initiative was not merely its declarative vision but its robust institutional mechanisms for realising it. Central to this endeavour was the creation of the Oregon Progress Board (OPB), an executive body mandated by the governor to oversee the

execution of the strategic plan, monitor progress, and serve as a coordinating nexus among budgeting, policy implementation, and evaluative processes across government departments.

The OPB employed a wide range of benchmark indicators, extending beyond administrative metrics to include broader societal outcomes such as educational attainment, child welfare, environmental sustainability, and labour force participation. This represented a shift from traditional input-based budgeting to a more outcome-oriented model of public management.

Notably, Oregon Benchmarks integrated elements of strategic foresight—such as continuous monitoring, adaptive planning, and feedback loops—enabling the state to adjust policies proactively in response to emerging issues like demographic change or environmental risk. These benchmarks were directly linked to the budgetary process, aligning strategic goals with resource allocation and reinforcing institutional coherence.

Academically, the Oregon model is seen as a structural convergence of foresight and performance management, offering an early example of integrated, results-based governance. Its influence has extended beyond Oregon, informing similar frameworks in states like Washington, Minnesota, and Utah, and receiving international recognition from the OECD and UNDP.

In conclusion, Oregon Shines and Oregon Benchmarks represent more than a state-level policy experiment; they constitute a pioneering institutional linkage between long-term visioning and actionable governance. By integrating budgeting, policy, evaluation, and civic engagement within a unified framework, Oregon provides a compelling empirical case of how strategic foresight can be embedded into the fabric of sustainable public policy. As governments confront mounting uncertainty from climate change, digital transformation, and demographic volatility, the Oregon experience continues to serve as a valuable policy reference for resilient and adaptive governance design.

7.3.1.3 Minnesota's Open Enrolment Policy

In the early 1990s, the State of Minnesota launched one of the most pioneering education reform initiatives in the US, aiming to address structural inequalities across the public school system—particularly disparities in resources and performance between regions. Introduced in

stages from 1988, the Open Enrolment Policy allowed students to apply to any public school in the state, regardless of their residential district (Education Commission of the States, 2002).

The policy was fundamentally aimed at granting greater educational agency to parents and students, encouraging performance-based competition among educational institutions, and ultimately enhancing the overall quality of public education. Notably, it was also regarded as a mechanism for promoting equity in educational opportunities by allowing students from lower-income households to access higher-performing schools (Greene, 2001).

Minnesota's open enrolment initiative has been interpreted as an experimental application of market-based competition principles within the public sector. It was widely analysed in academic discourse as a practical embodiment of Chubb and Moe's model of educational competition. These scholars posited that school choice would incentivise internal reform by encouraging autonomy and outcome-based performance within schools (Chubb and Moe, 1990). Minnesota's case has been heralded as a concrete operationalisation of this theoretical framework.

However, outcomes were mixed. Wells et al. (1999) identified unintended effects such as increased demand for well-resourced schools, which led to enrolment decline and funding loss in some urban schools. These challenges highlighted the need for complementary measures, particularly regarding equitable resource allocation aligned with student mobility.

Nevertheless, Minnesota's Open Enrolment Policy is widely considered a prescient policy response to structural inequalities within public education. It exemplifies a foresight-driven governance model that proactively addressed demographic shifts and evolving community needs. The initiative served as a prototype for other U.S. states, influencing the design of subsequent school choice policies.

7.3.1.4 The California 2025 Project

At the turn of the 21st century, California faced a range of complex challenges—including rapid demographic change, urban expansion, climate pressures, and resource depletion—highlighting the shortcomings of short-term, reactive policymaking. In response, the California Legislative Analyst's Office (LAO), in partnership with the RAND Corporation, launched the California 2025: Taking Responsibility for Growth initiative in 2004 (Hanak and Baldassare,

2005; LAO, 2004). The project aimed to establish a long-term strategic framework through scenario-based planning.

Unlike conventional population forecasts or economic outlooks, this project conducted a holistic examination of urban growth-related issues—such as traffic congestion, water scarcity, and housing demand—through integrated policy simulations. A key innovation lay in its methodological approach: RAND employed a hybrid model combining quantitative modelling techniques with qualitative expert panels, enabling a multi-pathway policy design strategy (Hanak et al., 2004).

A particularly noteworthy element of the project was its adoption of a cross-sector foresight approach, which transcended traditional departmental silos by integrating considerations across housing, transport, water resources, environmental sustainability, and infrastructure planning. For instance, comparative analyses between high-density urban development and low-density suburban sprawl provided decision-makers with insights into the economic and environmental ramifications of various growth models (Hanak and Barbour, 2005).

In water planning, the project modelled the long-term viability of inter-regional water transfers amid chronic drought and groundwater depletion, incorporating climate change projections and meteorological variability. This positioned it as an early model for climate-resilient policy (Hanak and Lund, 2008). The study also assessed the relative costs of infill housing versus suburban expansion, and investment trade-offs between public transport and road infrastructure—enhancing its practical value for decision-makers (Hanak and Baldassare, 2005).

The California 2025 Project thus stands as a pioneering example of strategic foresight in public policy. It went beyond vision-setting to inform concrete policy formulation, planning, and integration into formal budgeting and legislative processes. Its influence has since extended to other states and federal bodies seeking to embed long-term planning frameworks.

In conclusion, the California 2025 Project demonstrated how strategic foresight could be harnessed to systematically manage long-term uncertainties and address multi-dimensional policy challenges. Its comprehensive and empirically grounded methodology validated the use of foresight tools not merely for speculative forecasting but as instrumental frameworks for comparative policy evaluation and executable strategy design.

7.3.2 Comparative Analysis: State vs. Federal Foresight Approaches

Within the US's dual-layered governance system, strategic foresight takes notably different forms at federal and state levels. This section offers a comparative institutional analysis of these approaches, examining structural design, implementation modes, participatory practices, and the extent of policy integration. Particular attention is given to the epistemological and procedural contrasts between the federal government's formalised foresight systems and the more experimental, participatory models common at the state level—differences that significantly affect policy effectiveness and democratic responsiveness.

While federal foresight initiatives—such as those led by the NIC or GAO—typically prioritise standardisation and operate at a macro-strategic level, focusing on issues like geopolitical risk and interagency coordination, they can lack responsiveness to localised challenges (GAO, 2020; NIC, 2017). In contrast, state-level programmes—such as Hawaii's Futures Research Centre, Oregon Benchmarks, Minnesota's CHOICE initiative, and the California 2025 Project—tend to be more agile and context-sensitive, engaging more directly with local stakeholders and subnational realities.

A. Institutional Structures: Centralised Integration vs. Decentralised Experimentation

Federal foresight is typically embedded within formal, vertically integrated institutional architectures. Agencies such as the NIC, the ONA, and GAO's Center for Strategic Foresight are tasked with producing long-horizon analyses primarily to inform elite decision-makers. These structures are valued for their continuity and analytical robustness but often lack mechanisms for horizontal coordination and grassroots inclusion. In contrast, state governments often pursue a more decentralised and experimental approach, frequently engaging with universities, civil society organisations, and regional think tanks. Initiatives such as Oregon Shines and the Hawaii Research Center for Futures Studies embody a model of foresight rooted in collaborative inquiry, allowing for greater policy contextualisation and methodological innovation.

B. Implementation Mechanisms: Stable Systems vs. Adaptive Experimentation

At the federal level, foresight mechanisms are primarily oriented toward strategic ideation, using tools such as horizon scanning, scenario planning, and technological forecasting to guide high-level agenda setting. These systems are generally rigorous but are sometimes constrained by bureaucratic inertia and political temporality. State foresight, conversely, tends to be more directly coupled with operational planning. California's 2025 Project, for instance, integrated scenario-based simulations into legislative budgeting and spatial planning, aligning long-term visioning with short-term policy delivery. This "option-oriented" model represents a significant advancement in synchronising strategic foresight with day-to-day governance.

C. Participation and Culture: Bureaucratic Closure vs. Participatory Governance

Federal foresight tends to be technocratic and closed, particularly in domains such as defence and cybersecurity. While this ensures analytical fidelity, it can come at the cost of democratic legitimacy and public resonance. State-level foresight programmes, by contrast, frequently adopt participatory approaches. Initiatives such as Minnesota's Open Enrolment Policy and North Dakota's Prairie Scans demonstrate how community input and deliberative methods can be integrated into anticipatory governance. These approaches enhance policy legitimacy and efficacy by embedding foresight within lived experience and shared values.

D. Policy Connectivity: Strategic Ideation vs. Strategic Execution

A structural cleavage often exists in federal foresight between vision-setting and implementation. While federal bodies are adept at articulating strategic objectives, the operational translation of these visions is frequently impaired by jurisdictional fragmentation. State foresight practices, by contrast, are often embedded in more tightly integrated policy cycles. Oregon's benchmark indicators, for example, were directly tied to the state budgetary process, thereby ensuring coherence between vision, resources, and outcomes.

Taken together, the comparative trajectories of federal and state foresight reveal not only differing institutional logics but also complementary strengths. Federal foresight offers scale, authority, and long-term integration, while state-level initiatives excel in agility, contextual

relevance, and participatory engagement. Rather than viewing these models as oppositional, they should be understood as integral components of a multi-level foresight architecture—essential for addressing polycentric and systemic challenges that require both distributed and coordinated anticipatory capacity.

Notably, many state foresight programmes peaked in the 1990s and early 2000s, with their current status often unclear or undocumented. This highlights the need for renewed empirical research into their lifecycle and institutional durability. At the same time, the rise of non-governmental foresight actors—such as civic labs, universities, and consultancies—signals a shift towards co-governance, where public and non-state entities jointly shape collective futures. In this context, the comparative analysis presented here underscores the importance of connectivity, adaptability, and inclusivity in building resilient foresight ecosystems for 21st-century governance.

7.3.3 Concluding Implications: A Three-Pillar Assessment: Mission, Evaluation, and Talent

Strategic foresight initiatives at the subnational level in the US, particularly within state governments such as Hawaii, Oregon, Minnesota, and California, offer a distinctive set of institutional experiments that diverge meaningfully from federal models. These cases illuminate a nuanced interplay of structure and innovation, and collectively yield critical insights that may be distilled through a three-pillar evaluative framework—Mission, Evaluation, and Talent.

1. Mission Alignment: Embedding Vision in Contextual Strategy

State-level foresight has consistently demonstrated a pronounced capacity for aligning strategic mission with regional values, socio-cultural specificities, and environmental realities. The Hawaii Research Center for Futures Studies (HRFS), for instance, exemplifies this alignment through its central role in formulating the Hawaii 2050 Sustainability Plan—a comprehensive vision encompassing ecological resilience, food sovereignty, energy transitions, and social equity (HRFS, 2007; Dator, 2002). Similarly, California's 2025 Project integrated cross-sectoral concerns—ranging from urban planning to climate resilience—within a single policy framework, thereby translating foresight into actionable public governance (Hanak and Baldassare, 2005). These examples underscore the importance of rooting strategic foresight in

contextual relevance rather than universal abstraction, thus ensuring both legitimacy and traction in public policy.

2. Evaluation Embeddedness: Benchmarking and Reflexive Governance

Oregon's pioneering approach to performance-based governance through the Oregon Benchmarks initiative offers a paradigmatic case of foresight embedded within evaluative architecture. The Oregon Progress Board (OPB), established to oversee the implementation of Oregon Shines, employed a diverse set of outcome-based indicators spanning education, child welfare, environmental sustainability, and employment (Kaye, 2001; OPB, 1994). These benchmarks served as dynamic feedback mechanisms that informed budgetary alignment and adaptive planning. In so doing, Oregon institutionalised a system wherein long-term strategic intent was continuously tested against empirical outcomes, offering a reflexive model of foresight governance (OPB, 1994). This represents a departure from traditional input-driven public management, toward a model predicated on continuous learning and outcome optimisation.

3. Talent Capacity: Cultivating Institutional and Civic Foresight Competence

The sustainability of foresight architecture is contingent not merely upon institutional design, but equally upon the cultivation of strategic capabilities within both the bureaucracy and the wider civic ecosystem. HRFS's longstanding role in bridging academic futures studies and public policy exemplifies the value of intellectual brokerage in foresight governance (Dator, 2009). Meanwhile, Minnesota's Open Enrolment Policy operationalised foresight principles in education by enabling community-led responses to structural disparities (Greene, 2001; Wells et al., 1999). These initiatives reflect an expansive view of talent—not as a technocratic resource, but as a social infrastructure capable of co-creating futures across multiple domains. In this regard, talent development should be understood as the foundation for institutional adaptability and policy resilience.

Taken together, the experiences of these state-level foresight systems demonstrate that long-term governance capacity cannot be achieved through technocratic foresight alone. Instead, strategic foresight must be integrated as a culturally embedded, reflexively governed, and

inclusively enacted practice. The mission must be aligned with local values and systemic complexity; evaluation must be continuous and empirically grounded; and talent must be cultivated not only for strategic planning but for institutional learning and participatory engagement.

These implications yield three overarching conclusions:

- Mission clarity must be rooted in place-based visioning, allowing for the translation of foresight into policies that resonate with community identities and regional exigencies.
- Evaluation mechanisms must function not as static audits but as adaptive systems for feedback, learning, and course correction.
- Talent strategies must extend beyond bureaucratic expertise to include collaborative foresight capabilities that span civil society, academia, and public institutions.

As the twenty-first century unfolds amidst layered crises and systemic uncertainty, the foresight innovations pioneered at the state level provide a fertile testing ground for institutional configurations capable of meeting future challenges with dexterity, legitimacy, and strategic coherence.

7.4 Conclusion

This chapter has offered a comprehensive examination of the institutionalisation of strategic foresight across the executive, legislative, and subnational levels of the US government. The analysis reveals a central insight: foresight functions not merely as a technical capacity within individual agencies, but as an institutional capability that shapes the full arc of policy design and implementation.

At the federal executive level, drawing primarily on the work of Greenblott et al. (2018), we explored how various agencies have structured and operationalised foresight functions. Particular emphasis was placed on mission-oriented applications, the mitigation of institutional and cultural barriers through inter-agency coordination, and the enhancement of practical

foresight capacity via leadership integration, expert collaboration, and internal capability building. Federal-level efforts increasingly reflect a convergence of foresight with systems of audit, evaluation, budgeting, and strategic planning—gradually advancing towards the institutionalisation of anticipatory governance. Nevertheless, such centralised models are often accompanied by limitations in bureaucratic agility and implementation flexibility.

Within the legislative branch, a complementary dual structure has emerged. While formal foresight institutions such as the GAO’s Center for Strategic Foresight (CSF) and Strategic Planning and External Liaison (SPEL) play a pivotal role, the informal learning ecosystem fostered by the FFCOI adds a critical layer of participatory dynamism. FFCOI functions as a horizontal network of practitioners spanning multiple agencies, whose collective insights are informally—but substantively—reflected in policy reports, testimonies, and scenario analyses produced by the GAO. Together, these formal and informal components constitute a hybrid strategic interface where bureaucratic structure and epistemic community intersect.

At the state level, cases from Hawaii, Oregon, Minnesota, and California illustrate more experimental and participatory modes of foresight practice. Rooted in regional context and community engagement, these initiatives have addressed sustainability, education reform, resource governance, and demographic change through locally adapted strategies. In doing so, they complement federal-level foresight by enhancing context sensitivity and operational agility—dimensions often obscured in top-down models of governance.

In sum, the institutionalisation of foresight in the US should not be viewed through the lens of a single agency or governmental tier, but rather as an ongoing process of balancing formal institutionalisation, cultural internalisation, participatory learning, and policy connectivity within a multi-level governance framework. Each layer contributes distinctive strengths: the federal level offers strategic coherence and resource alignment; the state level contributes agility and contextual responsiveness; and the legislative branch provides democratic accountability and institutional continuity. Their integration offers the foundational infrastructure for future-oriented governance capable of navigating complexity, volatility, and long-term societal transformation.

Chapter 8 Research & Findings 2:

United States Cases

Building upon the institutional overview and evaluative analysis provided in Chapter 7, which outlined the emergence, diffusion, and organisational challenges of strategic foresight within the U.S. Executive Branch, this chapter turns to an in-depth examination of two exemplary foresight initiatives situated within distinct federal agencies. The aim here is to explore how strategic foresight principles are operationalised in real-world contexts, with particular attention to their organisational embedment, methodological rigour, and adaptive governance outcomes.

Section 8.1 focuses on the USDA Forest Service’s Forest Futures Horizon Scanning Project—an initiative that exemplifies the integration of foresight into long-term ecological stewardship and land management policy. Section 8.2 turns to the USCG’s Evergreen Strategic Foresight Project, widely regarded as a pioneering case of foresight institutionalisation in a security-oriented agency. Both cases are analysed through a triangulated methodological approach, combining literature review, official document analysis, in-depth interviews with agency personnel and foresight experts, and direct participant observation where feasible.

By highlighting these two cases, this chapter seeks to illustrate how federal agencies can navigate the complexity of long-range planning amid policy uncertainty, while also providing empirically grounded insights into the enabling conditions, design features, and institutional cultures that underpin foresight success. In doing so, it bridges the conceptual discussion of foresight governance with practice-oriented narratives, offering a nuanced account of strategic foresight as both an organisational capability and a policy innovation tool in the federal domain.

8.1 The USDA Forest Service’s “Forest Futures” Horizon Scanning Project

Among U.S. federal agencies, the USDA Forest Service stands out for its systematic integration of strategic foresight into the domains of environmental governance and long-term resource management. This section offers a focused examination of the agency’s foresight architecture, highlighting the Forest Futures Horizon Scanning Project as a seminal case of anticipatory

governance within an ecologically embedded policy domain. Unlike purely reactive approaches to environmental policy, the Forest Service’s foresight model demonstrates a proactive, institutionally embedded approach to sensing emerging trends, threats, and opportunities that shape forest ecosystems and public land management.

The analysis begins in Section 8.1.1 by situating the USDA Forest Service’s institutional vision and long-term policy orientation within the broader strategic foresight discourse. This is followed in Section 8.1.2 by a detailed overview of the agency’s horizon scanning mechanism, including its analytic protocols, participatory structures, and knowledge integration pathways. Sections 8.1.3 and 8.1.4 present two flagship applications of this system: the Forest Futures Horizon Scanning project (2019), which engaged a wide range of stakeholders to identify key signals and systemic risks; and the earlier Wildland Fire Management Futures project (2015), which anticipated future challenges in the governance of wildfire regimes under intensifying climate conditions. By unpacking the methods and institutional conditions that underpin these foresight initiatives, this section reveals the Forest Service’s commitment to building anticipatory capacity not as a one-time effort but as a recurring strategic function. Sections 8.1.5 illustrate the USDA Forest Service’s collaborative engagements with other domestic federal agencies and international partners, as well as the resultant impacts of these efforts. Finally, Section 8.1.6 distils the key policy implications through a “Three-Pillar Assessment”—Mission, Evaluation, and Talent—highlighting how foresight can be mainstreamed into public-sector decision-making in a scientifically grounded and organisationally sustainable manner.

8.1.1 Vision and Core Focus of The USDA Forest Service for Strategic Foresight

The USDA Forest Service operates under a formal mission to “sustain the health, diversity, and productivity of the nation’s forests and grasslands to meet the needs of present and future generations” (USDA Forest Service, 2020a). Grounded in this mission, the agency plays a pivotal role in the implementation of federal environmental governance, natural resource management, and long-term ecological stewardship. It has firmly embedded ecosystem-based management, sustainability, and community-driven governance into the institutional core of its strategic orientation.

This strategic identity is chiefly enacted through the agency’s Research and Development (R&D) branch, which supports evidence-based policymaking and engages in long-range and

anticipatory scientific inquiry in response to accelerating environmental and climatic uncertainty. The R&D branch articulates its foresight-oriented vision through five interlinked strategic domains: (1) sustainable forest management, (2) ecological restoration, (3) climate change adaptation and mitigation, (4) wildfire prevention and resilience, and (5) community-based natural resource governance (USDA Forest Service, 2022).

This orientation reflects an integrated systems perspective that transcends short-term technical interventions, aiming instead to address the long-term resilience of ecosystems and the evolving demands of society. The Forest Service's foresight efforts are grounded in the scientific monitoring and prediction of critical ecological indicators such as biodiversity, carbon storage, and disturbance regimes (McKinley et al., 2011).

Climate change poses a multifaceted threat to forest ecosystems, manifesting in altered precipitation patterns, increased mean temperatures, more frequent wildfires, and the proliferation of pests and pathogens (Dale et al., 2001; Allen et al., 2010). In response, the Forest Service has invested in advanced technologies—including satellite-based monitoring systems, fire behaviour modelling, and pest spread simulations—to support early detection and mitigation strategies (Kolden et al., 2020). Forest-based carbon sequestration has accordingly assumed heightened strategic importance in the context of national climate neutrality commitments.

The agency's strategic foresight capacity has evolved beyond ecological forecasting to encompass broader dimensions of institutional agility and learning. Tools such as horizon scanning, scenario planning, and adaptive planning have been instrumental in structuring uncertainty and enhancing anticipatory governance. Initiatives like Forest Futures exemplify this orientation by engaging stakeholders in the identification of weak signals and emerging risks, and by structuring long-term policy scenarios (Bengston, Dockry and Shifley, 2012; Bengston et al., 2019; Bengston, 2023, Interview).

Operating within the framework of the National Forest Management Act (1976), the agency develops formal forest management plans on a 10–15 year cycle. Yet these planning cycles are underpinned by long-range foresight horizons extending 50 years or more—necessary for addressing ecological dynamics such as habitat shifts, biodiversity patterns, and fire regimes (Bengston, Dockry and Shifley, 2012). This temporal structure informs the Forest Service's strategic planning paradigm, which is uniquely attuned to the long-term rhythms of ecological change (Bengston, 2023, Interview).

Recent years have seen the Forest Service broaden its foresight approach from ecological prediction to the incorporation of socio-technical and economic variables. Innovations such as drone-assisted monitoring, carbon markets, and artificial intelligence-based forest surveillance systems have enhanced the responsiveness and granularity of resource governance (Gregory et al., 2021). In turn, these tools have extended both the temporal scope and operational domain of policy formulation.

In this context, horizon scanning has become a cornerstone of the Forest Service’s practical foresight architecture, complementing traditional long-term modelling with an agile response to policy and technological volatility (Bengston, 2013). Following the 2012 revision of the Planning Rule, the Forest Service is now institutionally required to assess the “current and potential future conditions” of socio-economic and ecological systems, with horizon scanning serving as a primary instrument for this task (USDA Forest Service, 2012).

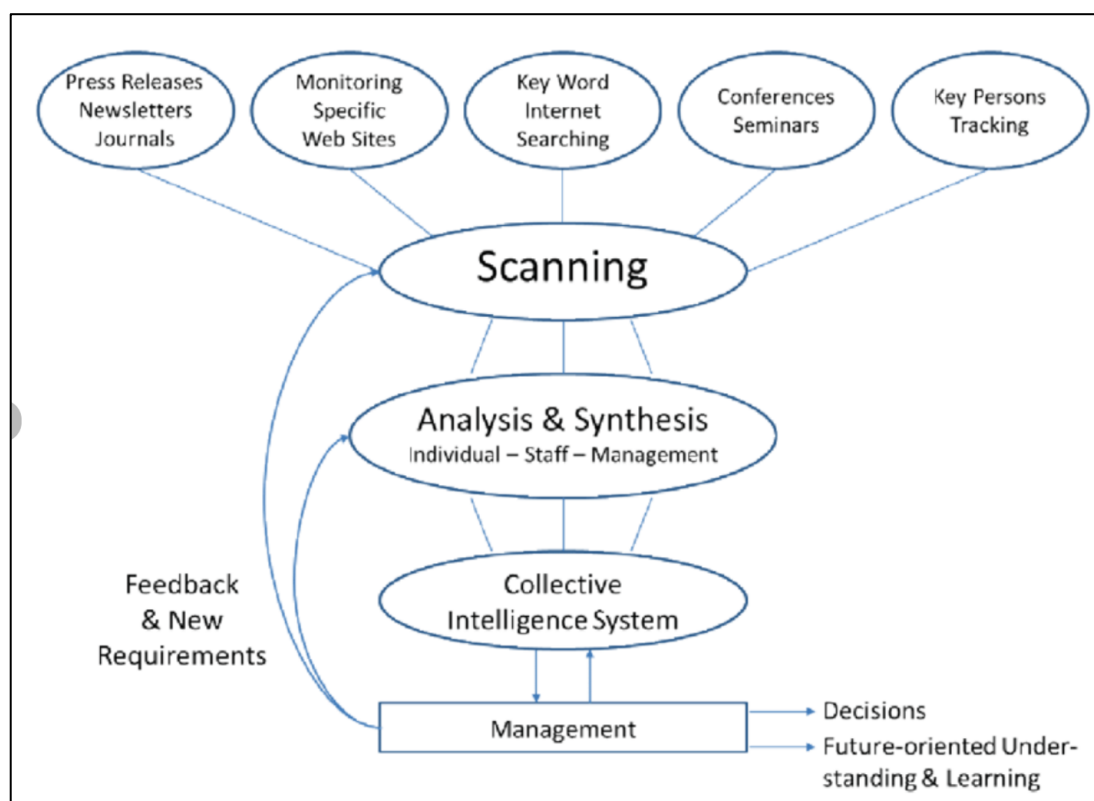
The agency employs horizon scanning not merely as a forecasting tool, but as a dynamic system for strengthening organisational learning and responsiveness. It integrates diverse methodologies—including cross-impact analysis, scenario construction, and nominal group techniques—into a multi-layered knowledge ecosystem comprising internal research networks, citizen participation, and expert panels (Glenn and Gordon, 2009). These mechanisms help convert deep uncertainty into actionable strategic insight, and enable adaptive recalibration in rapidly evolving policy environments.

Furthermore, the Forest Service has incorporated multi-temporal trajectory analysis and adaptive planning frameworks to reflect the complex interaction between system dynamics and future uncertainties (Slater and Candy, 2014). This approach not only improves foresight validity but also bridges the structural tension between long-term visioning and short-term policy execution.

Ultimately, the Forest Service’s strategic foresight represents more than an institutional capacity for prediction—it constitutes a model of public science, designed to inform resilient, science-based decision-making under conditions of increasing uncertainty. By aligning foresight with ecological and societal imperatives, the agency reinforces both its leadership in environmental governance and its role as a custodian of long-term public interest.

8.1.2 Core Mechanism of the USDA Forest Service’s Horizon Scanning System

This section delineates the conceptual and operational framework underlying the USDA Forest Service’s horizon scanning system, which is theoretically anchored in the model proposed by Gordon and Glenn (2009) via The Millennium Project, and has been extensively adopted within the agency’s foresight practice (Bengston, 2013).



[Figure 5] Conceptual Model of a USDA Horizon Scanning System (Bengston, 2013; Gordon and Glenn, 2009)

A. Stage-by-Stage Analysis of the Horizon Scanning System

Horizon scanning is a foresight methodology designed to systematically detect and interpret early signs of change—commonly referred to as ‘weak signals’—emerging from an organisation’s external environment. As conceptualised by Gordon and Glenn (2009), the process consists of four interrelated stages: Scanning, Analysis & Synthesis, Collective Intelligence System, and Management. The model adopts a cyclical feedback structure that facilitates continuous organisational learning and adaptive responsiveness.

a. Scanning

The initial phase, Scanning, constitutes the proactive search for incipient signals of change across multiple domains—social, technological, environmental, economic, and political. It lays the foundation for the entire system by offering the temporal advantage necessary for timely strategic response. As Gordon and Glenn (2009) note, scanning is not merely an act of data acquisition, but a cognitive lens through which the meaning and context of change are preliminarily interpreted, thereby shaping the depth and quality of subsequent analytical processes.

The USDA Forest Service adopts an explicitly pluralistic and diversified scanning strategy, notably through the use of meta-scanning—a cost-effective approach which systematically incorporates scanning outputs from other national and international foresight bodies. Moreover, the agency integrates both exploratory scanning, which focuses on unpredictable drivers such as emerging technologies, socio-cultural shifts, and ecological transitions, and directed scanning, which targets specific policy-relevant areas such as soil erosion, forest carbon sequestration, and land use change. This dual-mode approach enhances the comprehensiveness of environmental monitoring and strengthens the institutional capacity to maintain policy flexibility and resilience amid uncertainty.

b. Analysis & Synthesis

The second phase, Analysis & Synthesis, involves interpreting collected signals and assessing their interactions and broader systemic implications. The emphasis shifts from isolated trends to understanding macro-level outcomes arising from the interplay of multiple forces.

To support this, the USDA Forest Service employs a range of structured analytical tools. Notably, the Nominal Group Technique (NGT) helps minimise cognitive bias in group settings and facilitates the identification and prioritisation of strategic issues. Participants generate ideas individually, followed by anonymous voting and moderated discussion, resulting in consensus-based foresight outputs. These prioritised issues guide strategic adaptation, positioning the agency as a proactive shaper rather than a passive responder to change.

Additional tools include Impact/Likelihood Matrices (assessing significance and probability of trends), the Futures Wheel (mapping first- to third-order consequences), and Cross-Impact Analysis (quantifying interactions among key drivers to inform scenario development). Together, these methods elevate foresight from a predictive task to a form of system-level sense-making.

The insights generated are ultimately synthesised through scenario planning—a narrative method that constructs plausible future contexts and explores strategic responses. By integrating scenario planning into its horizon scanning, the USDA Forest Service embeds foresight as a central institutional practice. Analysis, therefore, not only produces intelligence but also reshapes strategic orientation.

c. Collective Intelligence System

The third phase, Collective Intelligence System, refers to the knowledge infrastructure developed to store, disseminate, and reorganise the information produced through scanning and analysis. It serves as the central hub for institutional learning and the operationalisation of foresight processes.

The USDA Forest Service implements this system using standardised metadata templates, categorising signals by domain, signal strength, probability, stakeholder relevance, and potential impact. Such structuring supports pattern recognition and comparative analysis over time. Furthermore, the platform includes user-friendly dashboards and filtering tools, allowing managers and analysts to track the evolution of specific issues—such as increased wildfire frequency or biodiversity loss—intuitively and in real time.

Importantly, the system is not a one-directional repository; it also enables interactive feedback mechanisms. Practitioners, researchers, and policymakers may contribute updates, annotate existing entries, or upload new data, thereby ensuring the system remains dynamic and responsive to collective expertise. Through this infrastructure, the USDA Forest Service integrates dispersed analytical outputs into the broader strategic decision-making framework, institutionalises a culture of foresight, and facilitates reflective learning based on the evaluation of past policy outcomes.

d. Management

The final phase, Management, marks the point at which insights derived from earlier phases are translated into actionable decisions and incorporated into strategic planning. It represents the operational interface between foresight and institutional practice.

At this stage, the USDA Forest Service utilises a multi-level decision-making loop, allowing actors across the organisational hierarchy—from local forest managers to federal policymakers—to apply scanning results to formulate or recalibrate strategies. For example, during long-term forest planning, weak signals indicating ecological anomalies or shifting public expectations are assessed and, where necessary, integrated into revised policy frameworks.

This phase also embeds feedback loops that enable system learning. Outcomes from implemented strategies are fed back into the scanning and analysis processes, refining future iterations. For instance, if a climate adaptation measure proves ineffective in practice, the assumptions underpinning it may be revisited and revised within the scanning or scenario development stages, catalysing broader strategic evolution.

Crucially, the management phase reinforces strategic sensitivity and organisational resilience. In the face of increasing environmental volatility and complex policy environments, the USDA Forest Service employs horizon scanning not merely as a forecasting instrument, but as a mechanism for institutionalising adaptive governance. Through timely strategy adjustments and contingency planning, the system transcends static models of planning and embodies a more agile, anticipatory mode of public policy design.

B. Organisational Approaches and Design Principles

The USDA Forest Service has pursued the institutionalisation of horizon scanning not merely as a forecasting technique, but as a strategic capability embedded within its organisational design. This endeavour has taken shape through a series of adaptive organisational experiments, shaped by internal structures, resource allocations, policy priorities, and information demands. Notably, the integration of the R&D branch and the planning functions under the National Forest System (NFS) constitutes a central axis of its foresight architecture (USDA Forest Service, 2022).

To operationalise foresight as a core organisational function, the Forest Service has adopted a hybrid organisational model—combining internal analytical capacity with external advisory networks. This structure supports both the institutionalisation of foresight and its integration across departmental boundaries (Bengston, 2013; Bengston et al., 2019). The Forest Futures and Wildland Fire Management Futures projects illustrate this model in practice, having employed expert workshops, scenario-building sessions, and policy briefings as interlinked modalities of networked engagement.

This hybrid configuration aligns closely with Gordon and Glenn’s (2009) recommended model for institutional foresight, which advocates for combining the continuity of in-house foresight teams with the flexibility and creative input of external experts. In the case of the USDA Forest Service, ongoing collaborations with academia, environmental think tanks, and climate policy specialists have proven instrumental in generating and refining complex foresight scenarios that inform federal land and resource policy (USDA Forest Service, 2021).

This organisational strategy is not limited to data gathering but is underpinned by a coherent system of design principles that support institutional learning and strategic adaptability. The USDA Forest Service has clearly articulated the following principles to guide the structuring of its horizon scanning system (Popper, 2008; Bengston, 2013).

1. Strategic Definition of Scope

Recognising the risks of both over-narrow and overly diffuse scanning efforts, the Forest Service employs a mixed-scope strategy. This combines broad horizon scanning of socio-technical and geopolitical developments—such as international climate governance and global environmental shifts—with in-depth scanning of priority issue areas, including forest carbon sequestration, wildfire resilience, and soil degradation (Bengston et al., 2012; USDA Forest Service, 2022).

2. Temporal Structuring and Cyclical Review

In addition to maintaining continuous scanning, the Forest Service aligns scanning outputs with major strategic planning cycles through the periodic publication of foresight reports and issue briefings. Notably, the Forest Futures Horizon Scanning Project (2019) implemented a biennial review cycle, including stakeholder input to update signal typologies and scenario narratives

(Bengston et al., 2019). This structure echoes international recommendations for multi-cycle scanning frameworks (UNEP, 2021; NIC, 2021).

3. Time Horizon Segmentation

To strengthen strategic coherence, the Forest Service applies a three-tiered time segmentation framework—Horizon 1 (1–3 years), Horizon 2 (4–10 years), and Horizon 3 (10+ years). These horizons guide scenario development and support differentiated policy planning, particularly in the domains of wildfire governance and climate adaptation (USDA Forest Service, 2010; Slater & Candy, 2014).

4. Source and Perspective Diversity

To ensure the breadth and validity of insight, the scanning system incorporates diverse data sources and viewpoints. In addition to official statistics and peer-reviewed literature, the Forest Service integrates inputs from citizen reports, NGO monitoring, and social media analysis. This pluralistic approach mitigates structural blind spots in institutional knowledge and facilitates the early detection of non-linear change patterns (Bengston, 2013; McKinley et al., 2011).

5. Multi-Modal Delivery of Foresight Outputs

To serve a broad and differentiated user base, the Forest Service disseminates scanning outputs through a variety of formats, including policy briefs, technical reports, visual scenario maps, workshop modules, and interactive dashboards. This diversity enables policy officials, field managers, researchers, and local communities to access foresight intelligence tailored to their operational and strategic contexts (USDA Forest Service, 2021).

Taken together, the USDA Forest Service’s horizon scanning system exemplifies a structurally integrated foresight model that extends well beyond technical forecasting. Its clearly defined operational principles, hybrid organisational design, and systematic integration with planning processes have made it a widely cited exemplar of institutional foresight in the U.S. public sector (Habegger, 2010; OECD, 2019). By linking institutional learning with adaptive governance, the system represents a mature and dynamic mode of public foresight capable of confronting complexity and uncertainty with strategic foresight and agility.

The subsequent sections, 8.1.3 and 8.1.4, offer a detailed examination of how the aforementioned organisational principles and scanning mechanisms have been operationalised through two case studies: the Forest Futures Horizon Scanning Project (2019) and Wildland

Fire Management Futures (2015). These sections also consider the broader strategic implications of these initiatives for institutional foresight and policy decision-making within the USDA Forest Service.

8.1.3 Case 1: The Forest Futures Horizon Scanning Project (2019)

a. Overview

The Forest Futures Horizon Scanning Project was inaugurated in 2016 as a joint initiative between the Strategic Foresight Group within the Northern Research Station of the Forest Service and the Foresight Programme at the University of Houston. Culminating in a comprehensive report published in 2019 (Hines et al., 2019), the project aimed to identify latent issues and weak signals insufficiently addressed or entirely overlooked by conventional forest management regimes. In doing so, it sought to bolster early warning capacities among strategic decision-makers and enable more proactive organisational responses to emergent change.

Given the extended temporal cycles characteristic of ecological and natural resource systems, traditional foresight within this domain has typically relied on long-range quantitative modelling. The Forest Futures project, however, recognised the limitations inherent in such predictive paradigms. Instead, it strategically refocused its scope on a medium- to long-term horizon—centred on the year 2030—enabling the integration of more dynamic external drivers such as technological innovation, socio-economic transitions, and policy volatility into strategic planning processes (Bengston, 2019).

Methodologically, the project adopted the Framework Foresight model developed by Hines and Bishop (2013), encompassing the successive stages of topic definition, scanning, analysis, scenario development, and action planning. Forests and forest ecosystems were designated as the central domain, around which a detailed domain map was constructed, integrating both internal system components (e.g., ecosystems, industries, institutions, management practices) and external STEEP factors (social, technological, economic, environmental, political).

The theoretical underpinnings of the project drew upon a synthesis of Molitor's (1977) Public Policy Lifecycle Model and the Three Horizons Framework articulated by Curry and Hodgson (2008). Molitor's framework traces how weak signals—initially marginalised or unrecognised by institutional actors—may, when catalysed by critical events (e.g., crises, regulatory change,

societal attention), evolve into emergent and eventually mainstream policy issues. Complementing this, Bryson (2011) characterises strategic issues in the public sector as fundamental questions that substantially affect an organisation’s mission, core values, stakeholder relationships, and operational mechanisms.

The project operationalised the Three Horizons model to structure its analysis, categorising each scanning hit into Horizon 1 (current systems), Horizon 2 (transitional dynamics), or Horizon 3 (transformational futures). Particular emphasis was placed on Horizon 3 signals—often under-institutionalised but potentially disruptive—as central to long-range strategic scenario development. This dual-framework architecture enabled simultaneous tracking of issue maturation and systemic transformation potential. By collecting and classifying over 1,000 scanning hits, the project not only built an extensive knowledge infrastructure but also contributed to the cultivation of an internal foresight culture within the USDA Forest Service.

b. Core Processes of the Horizon Scanning System

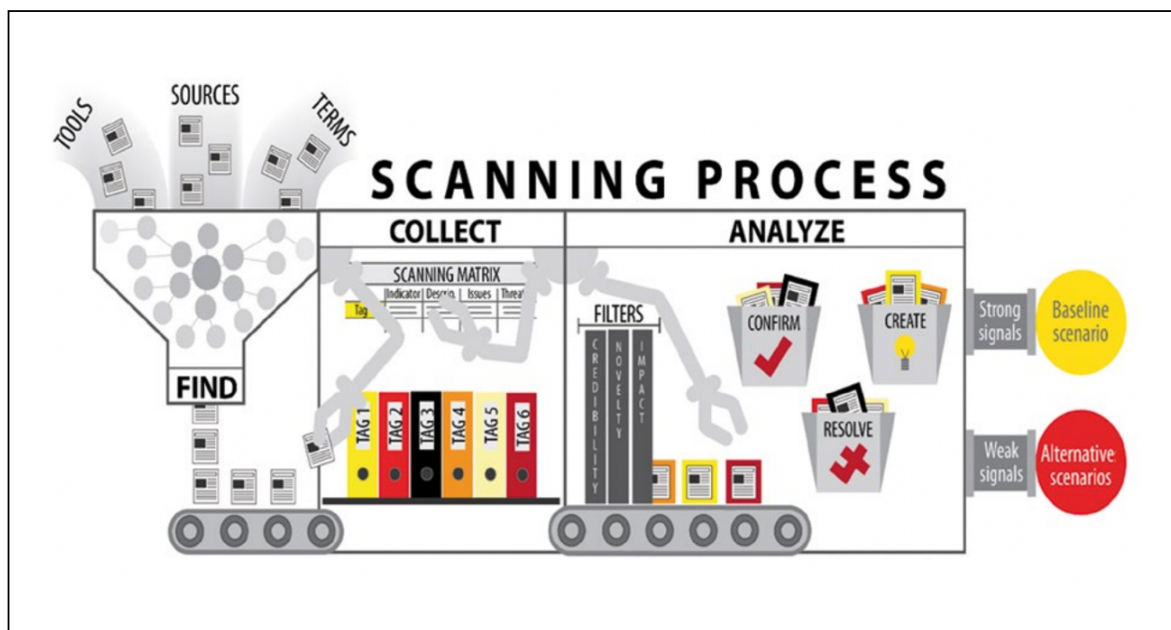
The Forest Futures initiative employed the University of Houston’s Framework Foresight methodology to construct a structured foresight system that links past trajectories with current trends and plausible futures, ultimately informing the design of preferred future strategies.

During the framing stage, a comprehensive domain map was developed to delineate the scope and architecture of the foresight process. This map encompassed subsystems such as ecosystems, industries, technologies, and policy regimes, and incorporated both geographic foci and policy relevance. Additionally, the project identified and qualitatively assessed both internal stakeholders within the USDA and external strategic actors to determine which emerging issues were considered of strategic import.

The scanning process was divided into three sequential procedural phases: Find, Collect, and Analyse.

- Find: The initial phase focused on the identification of early signals of systemic change, such as technological breakthroughs, shifts in social values, and novel environmental patterns. Foresight-relevant keywords (e.g., “futures”, “trend”, “vision”) were linked to categories in the domain map to guide systematic discovery.

- **Collect:** Relevant scanning hits were stored and organised via the Diigo social bookmarking platform. Entries were tagged according to a hierarchical taxonomy aligned with the domain map (e.g., "paper products" nested within "industry" → "forest products" → "paper"). This enabled visualisation of issue interlinkages and iterative refinement of the scanning structure.
- **Analyse:** In the final phase, scanning hits were evaluated qualitatively and quantitatively. Each was rated for novelty and strategic salience, with higher scores given to unrecognised or potentially disruptive signals. Top-ranked items underwent further assessment across seven criteria: credibility, novelty, plausibility, impact, relevance, urgency, and timeliness. These were weighted against the USDA Forest Service's strategic goals to prioritise issues most critical under constrained policy conditions.



[Figure 6] The Forest Futures Horizon Scanning process (Hines and Bishop, 2015)

This rigorous analytical architecture supported not only data classification but also strategic prioritisation and organisational decision-making regarding future policy scenarios. Indeed, the Forest Futures project effectively identified a number of emergent issues that merit future policy consideration (Bengston, 2019).

One such theme was the transformation of outdoor recreation in the era of social media. The proliferation of platforms such as Instagram and YouTube has contributed to a surge in visitation to specific natural landmarks, placing considerable strain on local infrastructure. This phenomenon—termed digitalised nature consumption—signals a broader behavioural and infrastructural shift, reinforced by increasing sales of recreational vehicles (RVs) and an evolving demand for public land and camping facilities.

c. Key Findings

The Forest Futures Horizon Scanning Project, through its meticulous framing and scanning methodologies, accumulated over 1,000 scanning hits, from which numerous emergent issues with potential policy implications were identified (Bengston, 2019). The analytical outcomes of the project yielded strategic insights along five principal dimensions:

First, several scanning hits illustrated how micro-level developments can evolve into indicators of structural transformation. For instance, the rise of nature-based tourism via social media initially appeared as site-specific visitor pressure and increased management demands, yet may ultimately drive a systemic revaluation of landscapes, public infrastructure, and environmental governance. This highlights how weak signals can culminate in significant policy shifts.

Second, a prominent trend was the spatial expansion of forest policy domains. Traditionally centred on national forests and protected areas, attention is increasingly turning to urban forestry—including street trees, parks, and community woodlands—linking forest policy with broader agendas such as urban resilience, climate adaptation, mental health, and social equity.

Third, technological innovation is reshaping forest management capacities. Emerging tools—such as drones, satellite remote sensing, and AI analytics—signal a shift from labour-intensive operations to predictive, data-driven approaches. Wider accessibility of such technologies also enables greater involvement from local authorities, communities, and civil society, fostering co-governance in forest stewardship.

Fourth, the identified issues varied significantly in temporal orientation. While some pertained to Horizon 1 (short-term tactical responses), most fell within Horizon 2 (medium-term transition) and Horizon 3 (long-term systemic change). This distribution suggests that current

policy frameworks may be ill-equipped to address accumulating mid- and long-range risks, reinforcing the importance of sustained strategic foresight.

Fifth, the project's conversion of scanning outputs into structured strategic issues stands as compelling evidence of its practical utility. Notably, the Forest Futures team identified the absence of an official strategic issues register within the Forest Service and undertook a remedial process that involved:

- Confirming this gap through engagement with the Policy Analysis and Communications Unit;
- Extracting latent issues from existing strategic documents and policy reports;
- Conducting in-depth analysis of approximately 200 Horizon 1 scanning hits to identify those that could be considered current and actionable policy issues (Bengston, 2019).

d. Differentiating Mission Implementation and Mission Support

Based on the issues identified, the project classified strategic issues into two overarching categories: those directly linked to mission execution and those associated with mission support. This distinction provided a structured framework for prioritising policy agendas and redefining strategic planning processes.

Mission Implementation: This category encompasses issues that are directly related to the Forest Service's core operational mandate, including forest protection, management, and restoration. Key issues include:

- Climate change
- Wildfires
- Forest fragmentation and loss
- Exotic and invasive species
- Biodiversity loss
- Water quality protection and water supply
- Improving forest resilience

Mission Support: This category refers to the institutional and technological conditions that enable or strengthen strategic action. Key issues include:

- Budget cuts
- Maintaining a healthy forest products industry
- Monitoring technologies
- Changes in recreation and tourism trends
- Urban forestry

This categorisation does more than merely enumerate issues—it serves as a critical framework for resource prioritisation and strategic alignment. In particular, the persistence of several Horizon 1 issues into the mid-2020s highlights the enduring relevance of horizon scanning not only as a long-term foresight tool but also as a mechanism for short-term policy prioritisation.

Moreover, the distinction between ‘Mission Execution’ and ‘Mission Support’ yields three key advantages for strategic policy decision-making:

- Clarification of resource allocation priorities: Execution-related issues demand immediate funding and personnel due to their urgency and interventionist character.
- Structural foundations for long-term capacity-building: Support-related issues guide the design of technological infrastructure, regulatory reforms, and ecosystem development.
- Functional alignment across organisational units: Operational departments are positioned to take the lead on execution issues, while strategic planning, R&D, and budgeting units focus on enabling support domains—thus fostering an integrated governance interface across the institution.

Ultimately, the horizon scanning system functions not merely as a foresight tool for distant futures, but as a robust decision-support mechanism that empowers public policy organisations to restructure strategic frameworks and enhance operational capacity. In this respect, the Forest Futures project constitutes a demonstrative case of applied strategic foresight with considerable practical significance.

e. Policy Implications

The Forest Futures Horizon Scanning Project provided more than a list of potential future challenges; it offered strategic insight into policy direction and institutional capacity-building for the USDA Forest Service. By aligning scanning-derived priorities with the dual dimensions of mission execution and support, the project strengthened the agency's strategic design and operational readiness across all levels.

From these insights, several key policy implications may be drawn:

First, enhancing organisational futures literacy is vital. Horizon scanning is more than a technical data exercise; it serves to embed forward-looking thinking and imaginative capacity across the organisation. Foresight should not be isolated within specialist units but integrated into planning, operations, and field activities. This requires comprehensive training, participatory mechanisms, and internal engagement to build foresight competencies organisation-wide.

Second, developing cross-sectoral integration strategies is essential. Policy areas such as urban forestry, digital transformation, and recreation cut across traditional silos, demanding interdepartmental coordination and collaboration with other government bodies and civil society. Mechanisms must be established to support horizontal governance and strategic coherence across these diverse domains.

Third, clear institutional pathways are needed to ensure scanning outputs inform formal policymaking. Too often, insights remain confined to internal reports without influencing strategic planning, budgeting, or regulatory review. Structured integration channels—such as aligning foresight outputs with budgeting cycles, long-term planning, and legislative reviews—can bridge this gap.

Fourth, scenario-based policy simulation should be adopted to navigate uncertainty. Horizon scanning aims not to predict a single future but to explore multiple plausible ones. Policy design should therefore be tested against diverse scenarios to evaluate systemic resilience and strategic agility.

In conclusion, the Forest Futures Horizon Scanning Project exemplifies applied foresight that enhances organisational capacity, adaptability, and responsiveness. By institutionalising future-oriented practices and shifting the focus from prediction to strategic exploration, it strengthens the organisation's ability to manage uncertainty—an essential foundation for sustainable forestry policymaking in the face of complex challenges such as climate change, social transformation, and technological disruption.

8.1.4 Case 2: Wildland Fire Management Futures (2015)

a. Overview

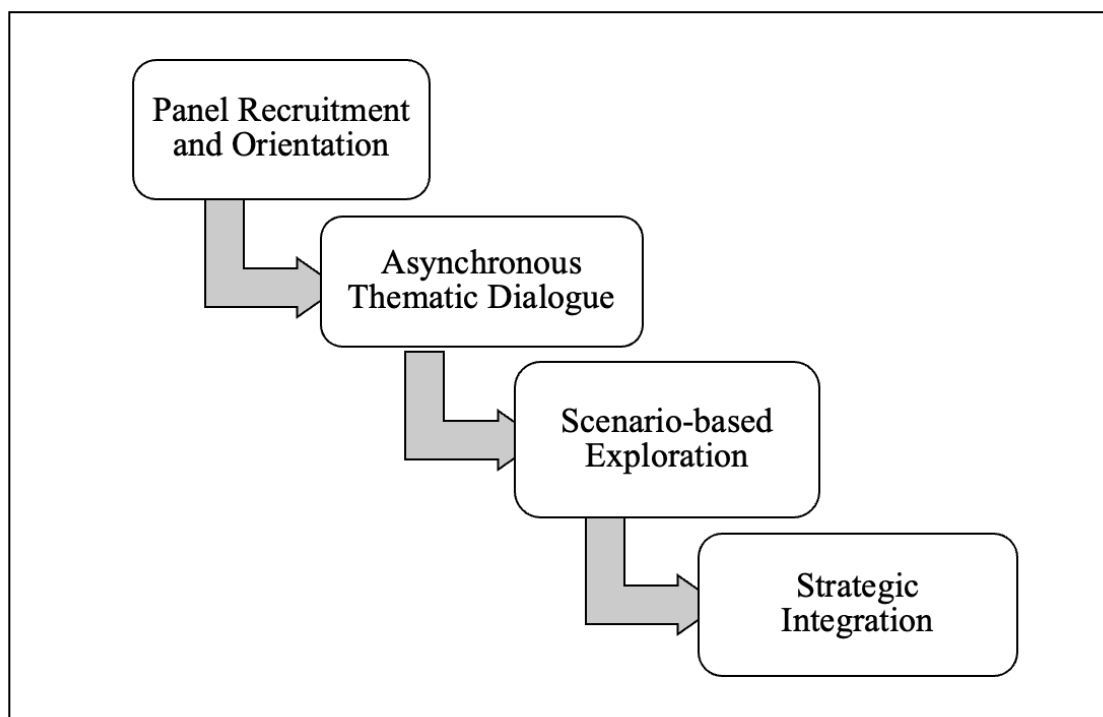
This case study examines the strategic foresight methodologies applied in the context of wildland fire governance, focusing on the 2015 USDA Forest Service initiative entitled Wildland Fire Management Futures: Insights from a Foresight Panel. This project marked a paradigmatic shift in fire policy thinking, challenging the prevailing suppression-centric paradigm and underscoring the structural limitations of traditional risk management approaches in the face of 21st-century socio-ecological complexity.

The foresight initiative was conceived as a complement—and, in some respects, a corrective—to the conventional Quadrennial Fire Review (QFR), a recurring strategic assessment jointly undertaken by federal fire agencies and associated partners. While technically robust, the QFR remains narrowly tethered to expert-driven extrapolations of present conditions, thereby limiting its capacity to anticipate discontinuities, emergent behaviours, or non-linear transitions in fire regimes. These limitations are particularly acute given the complex adaptive nature of wildland fire systems.

In response, the Forest Service curated an epistemologically diverse foresight panel comprising nine members—seven drawn from the futures studies community and two from the domains of fire governance and social science. The inclusion of prominent figures such as James Dator, originator of the widely adopted 'Alternative Futures' typology (Dator, 2002; 2009), and Peter Bishop, architect of the Framework Foresight Model (Bishop and Hines, 2010; 2012), ensured theoretical and methodological rigour. The participation of experts in fire communication and social acceptance, along with the inclusion of speculative fiction author Elizabeth Hand (Hand, 2000), further enriched the deliberative process, offering an imaginative impetus for scenario construction and policy reframing (Ager et al., 2021).

Eschewing deterministic forecasting, the panel employed a multi-scenario design that integrated a wide array of social, technological, and ecological uncertainties. This pluralistic approach aimed not only to reconceptualise fire governance but to enable more sustainable and anticipatory institutional architectures capable of navigating systemic complexity.

b. The Wildland Fire Management Foresight Panel Process



[Figure 7] The Wildland Fire Management Foresight Panel Process, by Author

The foresight methodology adopted in this initiative diverged markedly from traditional expert elicitation or narrowly scoped scenario planning. Instead, it employed a four-stage, deliberately structured model: (1) panel recruitment and orientation, (2) asynchronous thematic dialogue, (3) scenario-based exploration, and (4) strategic integration. Each phase was explicitly designed to elicit reflexive, cross-disciplinary insight and to interrogate normative and epistemic assumptions underpinning fire governance.

In the initial phase, panel members received briefing materials encompassing the history of wildfire policy, the wildland-urban interface (WUI), climate dynamics, and institutional arrangements. Participants subsequently submitted reflective position papers identifying key trends likely to shape future fire regimes. These served both as cognitive alignment tools and

as diagnostic artefacts for thematic coding. Twelve key themes emerged from the first round of submissions—including climate change, serious gaming, risk insurance, monitoring technologies, and broader political-economic considerations. These themes formed the basis of asynchronous dialogue hosted on an online platform. Two exploratory prompts—“Can the Forest Service escape its social trap?” and “Preferred and Likely Futures”—were introduced mid-course to provoke deliberation on institutional inertia and normative desirability.

In the second phase, discussions centred around three mini-scenarios derived from Dator’s Alternative Futures framework (Dator, 2002; 2009): Collapse, Continue, and Transformation. These narratives served as heuristic devices for interrogating potential socio-technical trajectories. A concurrent “Wild Card” module introduced improbable but high-impact shocks—such as nanotechnology-induced virtual fires or institutional collapse—thereby embedding deep uncertainty into the foresight architecture and enhancing organisational agility.

The third phase synthesised strategic insights across the scenarios, focusing on robust policy options applicable under divergent futures. Particular emphasis was placed on institutional feasibility, actor accountability, and procedural mechanisms for embedding foresight capabilities. The fourth phase—a qualitative textual analysis—applied open coding methods to extract consensus themes and contested viewpoints, which were subsequently structured into actionable policy recommendations.

c. Key Findings

The Wildland Fire Management Futures initiative identified the necessity and direction for a paradigm shift in wildfire governance through a combination of scenario-based analysis and structured expert dialogue. The project not only highlighted the limitations inherent in the prevailing suppression-centric response model, but also underscored the need to reorient strategic thinking towards the construction of ecological and social resilience. Crucially, the expert panel sessions functioned not merely as forums for opinion exchange, but as arenas for strategic learning aimed at formulating actionable shared principles. Five broad areas of consensus emerged among the panel members:

1. The current suppression-centric model is fundamentally unsustainable.
2. Wildland fire is a necessary and recurrent process within natural ecosystems.

3. A resilient socio-ecological system that coexists with fire must be cultivated over the long term.
4. Risk management must transcend the remit of public institutions alone and instead be pursued through collaborative governance with stakeholders.
5. To enable such a transformation, foresight-oriented thinking and policy-making must be institutionally embedded.

This emergent paradigm calls not merely for the refinement of firefighting technologies or enhanced suppression capabilities. Rather, it reframes wildland fire not as an episodic disaster but as an integral and recurrent component of ecological cycles and long-term resilience formation. It advocates a system-based approach grounded in co-governance among local communities, federal agencies, and private actors, wherein risk is jointly understood and managed.

Such an approach necessitates moving beyond technologically prescriptive solutions towards a suite of integrated strategies: social learning, community resilience building, adaptive institutional design, and the consolidation of decentralised risk governance networks.

The strategic trajectory that the USDA Forest Service is urged to pursue aligns intrinsically with this paradigm shift. Of paramount importance is the restructuring of budgetary frameworks, risk perceptions, and organisational cultures-currently shaped by decades of suppression-focused operations-towards preventive mitigation, ecosystem-based management, and futures-oriented communication strategies. Additionally, the foresight methodologies piloted in this initiative-such as horizon scanning, scenario-based policy design, and structured expert discourse-should not be treated as ad hoc exercises, but rather institutionalised as core operating capacities across the policy and leadership continuum.

Ultimately, this project exemplifies a pioneering departure from reductive conceptions of wildfire as either a natural hazard or a technical challenge. It redefines the phenomenon as a resilience-building imperative within complex socio-ecological systems, and demonstrates the practical feasibility of integrated transformations in governance, organisation, and strategy. In doing so, it affirms the role of strategic foresight not merely as a predictive tool but as a catalytic mechanism for governance innovation and organisational futures-readiness.

d. Policy Implications

In conclusion, the Wildland Fire Management Futures project challenges the prevailing policy paradigm that treats wildfires primarily as acute emergencies. Instead, it calls for a fundamental reinterpretation of wildfire governance from a long-term, structural systems perspective. The policy implications derived from this project transcend mere strategic recommendations, demanding a radical redesign of forward-looking public policy planning frameworks.

First, wildfire management must be redefined as a strategy for fostering resilience within socio-ecological systems. This entails recognising fire as a natural landscape element and moving from suppression towards enabling its presence in adaptive and controlled forms. Such a shift supports local resilience and reorients resource management practices.

Second, wildfire resilience should be integrated across sectors, including climate adaptation, urban planning, and infrastructure. As it intersects with housing, public health, and economic systems, coordinated inter-ministerial governance is essential—signalling a move from siloed environmental policy to integrated public strategy.

Third, the institutionalisation of strategic foresight must be embedded throughout all stages of the policy cycle. Tools such as horizon scanning, scenario planning, and expert panel consultations should no longer be treated as exceptional exercises but rather adopted as standard procedures in policy formulation and evaluation. The case of the USDA Forest Service demonstrates how futures-oriented methodologies can be effectively integrated into operational structures to support the design of high-leverage, cost-effective strategies.

Fourth, it is essential to strengthen community-based risk awareness and response systems. Rather than relying solely on top-down responses from federal or state agencies, a distributed governance model should empower local governments, civil society organisations, and Indigenous communities. Such an approach promotes autonomy and flexibility while structurally reducing post-fire costs and damages.

Lastly, a cultural transformation within public institutions is required. In an era of deep uncertainty and non-linear change, adaptive learning and strategic thinking should be prioritised over reliance on predictive technologies. This requires rethinking performance metrics towards capabilities that support anticipation and agile responses.

Although the project culminated in a 2015 report, its relevance has only grown. Recent USFS initiatives—such as the Fire Management Strategy, Climate Adaptation Framework, and Community Wildfire Defence Grant—echo its resilience-based, foresight-driven approach. These developments demonstrate the project's tangible influence on institutional design and public investment, underscoring the policy value of futures-oriented research.

8.1.5 Collaboration with Domestic Federal Bodies and International Networks

The USDA Forest Service's R&D division plays a central role in evidence-based policy development, applying foresight methodologies to craft strategies responsive to long-term environmental change. These efforts are closely integrated with both domestic federal agencies and international networks, fostering collaborative responses to ecological challenges and enabling the co-production of knowledge. In this context, foresight functions not merely as an analytical tool, but as a strategic asset embedded in national and global governance frameworks.

Domestically, the Forest Service's partnership with the U.S. Environmental Protection Agency (EPA) is particularly significant. Recognising climate adaptation as a federal priority, the EPA's Climate Change Adaptation Implementation Plans (2014) required each agency to assess climate risks and formulate tailored adaptation strategies. In turn, the Forest Service has developed ecosystem-based approaches that provide scientific foundations for identifying early stressors and enhancing ecological resilience. These include scenario-based analyses of shifting species compositions, pest outbreaks, and increased wildfire risks in vulnerable regions such as alpine and northern coniferous forests (EPA, 2014; Vose et al., 2016).

Collaboration with NOAA and NASA further enhances the Forest Service's climate forecasting and environmental monitoring capabilities. NOAA contributes high-resolution climate and hydrological models, while NASA supplies crucial spatial data through MODIS and Landsat imagery, supporting the tracking of forest dynamics and fire activity. These interagency efforts form a robust foresight infrastructure, enabling applied research such as wildfire spread modelling, pest risk indexing, and long-term carbon sequestration planning (Kolden et al., 2020).

On the international front, a longstanding partnership with the Canadian Forest Service reflects the transboundary nature of North American forest ecosystems. Joint initiatives—such as the alignment of Canada's *Canadian Wildland Fire Strategy* with the U.S. *National Cohesive*

Wildland Fire Management Strategy—facilitate shared development of probabilistic fire models, risk maps, and fuel management technologies. Additionally, collaborative research on transboundary pests like the western spruce budworm aims to forecast migration patterns and develop coordinated mitigation responses (Johnston et al., 2020).

The Forest Service’s foresight efforts also interface with international policy networks, contributing to the global contextualisation of U.S. forest ecosystem futures. Through its involvement with the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Forest Service aligns its national forest scenarios with global modelling frameworks, thereby exploring the coherence between national policymaking and science-based international governance (IPBES, 2016). Furthermore, by participating in the Food and Agriculture Organization’s Global Forest Resources Assessment (2020), the agency not only submits national forest trend data but also reinforces a comparative basis for assessing global forest governance responses and sustainability trajectories.

Such domestic and international collaborations demonstrate that foresight strategy transcends internal capacity building, acting instead as a conduit for cross-governmental coordination and enhanced global responsiveness. Through its multidimensional networked approach, the Forest Service R&D division is crafting more actionable and anticipatory strategies for addressing the uncertain futures of forest ecosystems, thereby playing a vital role in advancing the resilience and sustainability of American forest governance.

8.1.6 Concluding Implications: A Three-Pillar Assessment: Mission, Evaluation, and Talent

The USDA Forest Service’s strategic foresight initiatives—most notably the Forest Futures Horizon Scanning Project—extend beyond traditional predictive planning. Rather than solely anticipating environmental trends, these efforts have driven institutional change across three key dimensions: mission delivery, evaluative learning, and talent development. The two case studies—Forest Futures Horizon Scanning Project (2019) and Wildland Fire Management Futures (2015)—though rooted in distinct policy areas (forest ecosystems and fire governance), converge in offering critical insights across these foundational pillars.

(1) Mission Alignment: Bridging Strategic Objectives and Emerging Issues

The Forest Futures project redefined strategic mission orientation by integrating non-traditional signals—such as digital leisure patterns, urban forestry expansion, and technological innovation—into a broader analytical architecture. This study proposes a dual interpretative framework comprising Mission Execution and Mission Support, through which foresight-derived issues can be categorised either as directly advancing the agency's operational mandate or as constituting enabling conditions that influence institutional capability.

Such a bifurcation facilitates more rational resource allocation and clearer strategic prioritisation by delineating between core mission areas (e.g. climate change, wildfire, biodiversity) and systemic constraints (e.g. budgetary limitations, urbanisation trends, technological shifts). The dual-framing model thereby supports an integrated response to complexity, linking strategic foresight to both immediate operational imperatives and long-term capacity-building functions.

The Wildland Fire Management Futures initiative, meanwhile, challenged the entrenched suppression-centric paradigm by promoting a shift towards resilience-based fire governance. Interpreted through the lens of Mission Execution, this project articulated a structural reconfiguration in how wildland fire is conceptualised—from a hazard to be suppressed, to a natural process requiring co-existence and adaptive learning. The strategic proposition of "fire-resilient coexistence" signalled not only a policy innovation, but a conceptual reorientation of wildfire as a critical ecological process to be co-managed with communities.

(2) Evaluation Embedding: Constructing Feedback Loops within Foresight Systems

The Forest Futures project is best understood not as a singular report but as a foundational component of a learning organisation. It contributed to the internal institutionalisation of foresight as a cyclical process—spanning signal identification, issue framing, scenario construction, and strategic integration. The identification of over 1,000 scanning hits did not serve merely as raw input, but formed the basis for a reflexive, time-sensitive evaluative system, enabling multi-horizon analyses across short-, medium-, and long-term policy risks.

In parallel, the Wildland Fire Management Futures case addressed the limitations of the Quadrennial Fire Review (QFR), whose expert-driven and trend-based nature proved inadequate in capturing nonlinear dynamics. Instead, the project deployed scenario

methodologies grounded in Dator’s Alternative Futures Framework, alongside “wild card” events, to embed strategic agility and systemic foresight within policy evaluation. This allowed for the exploration of futures characterised by uncertainty, disruption, and transformation.

Through this lens, foresight evaluation ceases to be a retrospective performance audit and becomes a mechanism for organisational self-awareness and proactive recalibration. The multi-horizon structuring of foresight feedback loops positions foresight as an evaluative capacity in its own right—bridging the gap between short-term results and long-term resilience strategies.

(3) Talent Strategy: Strengthening the Human Capital for Organisational Foresight

Both projects underscore that foresight is not the exclusive domain of technical experts but a distributed cognitive function across the institution. In Forest Futures, the inclusion of informal “Water Cooler” dialogues fostered the bottom-up diffusion of imaginative thinking, creating fertile ground for cross-departmental idea generation and narrative experimentation. In Wildland Fire Management Futures, the interdisciplinary composition of the foresight panel—comprising futurists, strategists, science fiction writers, and fire policy experts—demonstrated the epistemic advantage of cognitive diversity in scenario construction and strategic learning.

On the basis of these examples, this study identifies the need for a structured talent strategy that integrates expertise, imagination, and institutional learning. This strategy encompasses three key elements:

- The development of training programmes that institutionalise foresight literacy among policy planners.
- The promotion of cross-agency and international educational exchange platforms.
- The cultivation of an organisational culture that values informal learning and speculative thinking.

Rather than merely recruiting foresight specialists, the goal must be to construct a strategic learning ecosystem wherein foresight capabilities are embedded across hierarchical and functional boundaries. Such an approach will serve to enhance policy sensitivity, operational agility, and institutional responsiveness in the face of complex, evolving forest governance challenges.

8.2 The USCG “Evergreen” Strategic Foresight Project

The USCG, as a federal agency with a broad and multifaceted mandate—including maritime security, disaster response, environmental protection, and law enforcement—operates in an increasingly complex strategic environment. The intensification of climate change, rising geopolitical instability, and the rapid emergence of technologies such as artificial intelligence and autonomous systems have transformed its operational context, placing mounting pressure on legacy planning assumptions. Traditional strategic planning models, often reliant on linear projections and past experience, are proving insufficient to cope with the speed and scale of contemporary disruptions. As a result, public organisations are being compelled to reorient their strategic capacity towards long-term visioning, institutional agility, and anticipatory governance.

In response to this shift, the USCG launched the Evergreen Strategic Foresight Project in 2003. Building on the 1998 Long View study, Evergreen was designed as a scenario-based planning framework to extend the Coast Guard’s foresight horizon by 15 to 25 years. Rather than functioning as a simple forecasting tool, Evergreen embeds future-oriented thinking, resilience, and organisational learning into strategic processes. It reflects a conscious move from reactive planning to proactive engagement with uncertainty, positioning the USCG as a leading case of foresight institutionalisation within the US federal system (Davenport et al., 2021; USCG, 1999a; USCG, 2003; USCG, 2019).

As Scoblic (2020) argues, strategic foresight involves “the institutionalisation of organisational imagination about the future”, comprising three key elements: the creation of plausible scenarios, the reshaping of internal mental models, and the cultivation of strategic learning and adaptive capacity. The Evergreen project operationalises this framework, often cited as a benchmark for embedding foresight through scenario building and strategic dialogue. For example, during Evergreen V (2016–2022), over 300 personnel and external experts engaged in multi-year cycles of strategic gaming, research, and scenario development (USCG, 2022). These activities supported the identification of emerging risks and opportunities while fostering shared strategic awareness across organisational levels. Evergreen helped challenge entrenched assumptions and reorient the organisation toward long-term missions beyond immediate operational concerns (Greenblott et al., 2018).

This section proceeds as follows. It first introduces the vision and foresight objectives of the Evergreen Initiative (Section 8.2.1). It then traces the project’s development and major milestones (Section 8.2.2), followed by an examination of its operational design and procedures (Section 8.2.3). Subsequently, Section 8.2.4 reviews the most recent Evergreen V project, conducted between 2016 and 2022, as a representative case, illustrating the U.S. Coast Guard’s systematic development and implementation of a strategic foresight methodology over a four-year period. The section concludes with Section 8.2.5, which synthesises the key insights through a three-pillar framework—Mission, Evaluation, and Talent—to draw broader lessons for strategic foresight in public governance.

8.2.1 Vision and Foresight Objectives of the USCG Project Evergreen

The USCG traces its origins to the establishment of the Revenue-Marine on 4 August 1790, under the direction of Alexander Hamilton, then Secretary of the Treasury. Initially formed to enforce customs duties and regulate maritime commerce, it has since evolved into the oldest continuously operating naval service in the US. Through key institutional mergers—including the 1915 unification of the Revenue Cutter Service and the Life-Saving Service, and the 1939 absorption of the Lighthouse Service—the USCG emerged as the primary federal authority for maritime safety, navigation, and life-saving. In the post-war era, the Coast Guard’s mandate expanded significantly to include environmental protection, national defence, disaster response, and maritime governance. In 2003, the “Evergreen” Strategic Foresight Programme was launched—building upon the 1998 *Long View* study—with the aim of anticipating future strategic environments and shaping long-term organisational strategy (USCG, 1999a; USCG, 2003). The name ‘Evergreen’ reflects its commitment to enduring relevance, institutional resilience, and the development of a sustainable foresight framework in the face of geopolitical and technological change (Davenport et al., 2014).

Operating under the auspices of the DHS, the USCG pursues a broad mission encompassing maritime safety, security, and environmental stewardship. In line with DHS goals, it works with other federal agencies to protect the American people while upholding liberty, prosperity, and the rule of law. Its operational remit includes counter-trafficking, search and rescue, environmental protection, and humanitarian assistance (Scoblic, 2021).

Throughout its history, the USCG has taken part in every major US conflict—from the Quasi-War with France to both World Wars, the Cold War, and the Global War on Terror. Though a

civilian agency in peacetime, it may be placed under the Department of the Navy during wartime by presidential or congressional order, as occurred in both World Wars. Despite being the second smallest US Armed Forces branch, the USCG commands the twelfth largest naval fleet globally, highlighting its unique dual role in domestic and international maritime affairs.

The USCG now operates in a strategic environment marked by increasing complexity. Traditional national security threats are now compounded by emergent challenges such as cyber incursions, transnational criminal networks, and the strategic recalibration of maritime sovereignty. Geopolitical contention over access to marine resources, the operational implications of a warming Arctic, and the expansion of Indo-Pacific maritime competition are all poised to shape the strategic calculus of the Coast Guard over the coming decades (US HSOAC, 2020).

To address this evolving threat landscape, the USCG has articulated four primary mission domains: (1) the safeguarding of national and homeland security; (2) the enforcement of legal and treaty obligations; (3) the facilitation of safe, secure, and efficient maritime commerce; and (4) the preservation of oceanic and coastal ecosystems (USCG, 2018). To sustain these imperatives while maintaining the institutional agility required to navigate uncertain futures, the Evergreen Programme has been institutionalised as a core strategic foresight mechanism.

As a structured yet adaptive framework, Evergreen enables the USCG to craft long-term strategic visions while preserving the capacity to iteratively revise these orientations in response to shifting operational conditions. Its cyclical nature—synchronised with senior leadership transitions—facilitates strategic continuity whilst embedding a culture of reflexivity and strategic learning (National Research Council, 2015). The very term ‘Evergreen’ symbolically reflects this dual aspiration: the pursuit of durable strategic coherence alongside adaptive renewal.

Unlike conventional planning instruments constrained by short-termism, Evergreen promotes a strategic culture that explicitly anticipates technological disruption, climate instability, and geopolitical fluidity. It functions not merely as a static policy document, but as an institutionalised platform for scenario planning, horizon scanning, and strategic wargaming. These tools serve to embed strategic foresight within the fabric of organisational planning, influencing operational design, capability development, resource allocation, and institutional norms (US HSOAC, 2020; 2018).

Positioned within the wider architecture of U.S. national security strategy, Evergreen serves as a critical interface linking high-level federal strategic frameworks—such as the National Security Strategy and the National Defense Strategy—with the Coast Guard’s internal strategic instruments (White House, 2022; DoD, 2022; USCG, 2018). In this respect, Evergreen plays a pivotal integrative function, enhancing strategic coherence across bureaucratic levels and operational domains (US HSOAC, 2020; USCG, 2019). Moreover, Evergreen bridges the traditional divide between strategy formulation and operational execution. In alignment with Mintzberg’s (1994) conceptualisation of strategy-as-learning, it accommodates both deliberate planning and emergent adaptation. It fosters an institutional environment that encourages iterative feedback, experiential learning, and the ongoing recalibration of strategic assumptions (Davenport et al., 2021; USCG, 2019). Embedded in administrative processes, it informs policy formulation, doctrinal evolution, capability procurement, budgetary prioritisation, and risk governance alike (US HSOAC, 2020; USCG, 2018).

Ultimately, Evergreen constitutes both a strategic anchor and an engine of adaptive transformation—maintaining a dynamic equilibrium between external volatility and internal coherence. It exemplifies the USCG’s enduring commitment to cultivating a strategic rhythm that harmonises long-term vision with the realities of an increasingly unpredictable maritime security environment (US HSOAC, 2020; USCG, 2019).



[Figure 8] The USCG Strategic Framework (HSOAC, 2020; USCG, 2018; p. 8)

8.2.2 Historical Evolution of the Evergreen project

The development of the USCG's Evergreen Programme cannot be fully understood without first examining its conceptual and institutional origins. The roots of the initiative lie in the *Long View* Project (1998–2001), which marked the Coast Guard's first formal engagement with scenario-based strategic planning (USCG, 1999a; Ringland, 1998). This section explores the evolution of the Evergreen Programme through two phases: first, the foundational insights of the *Long View* Project, and second, the institutional maturation and iterative expansion of Evergreen as a central instrument of strategic execution (US HSOAC, 2020; USCG, 2015b; 2019).

8.2.2.1 The Long View Project (1998–2001): Laying the Foundation for Scenario-Based Planning

Initiated three years prior to the 9/11 terrorist attacks, the Long View Project marked the USCG first major institutional foray into long-range strategic thinking amidst an increasingly uncertain global security environment. Rather than producing static strategy documents, the project aimed to embed adaptive thinking, scenario-based foresight, and planning under uncertainty. It was among the earliest efforts within the U.S. national security sphere to operationalise strategic foresight as a practical planning tool (Futures Strategy Group, 2001).

“A little bit of history. They did the Long View before. What happened was—it didn't really go anywhere. It was a nice report, like, “Oh, okay, that's a great report. Then 9/11 happened. After 9/11, they went back to Long View and said, “Hey, let's take a look at all that foresight stuff we were doing pre-9/11. What they recognized was that the strategies Long View suggested—maybe we should think about doing or implementing—would have been very successful in a post-9/11 world. They didn't predict 9/11, but thinking about the future in a different way uncovered things they should have done.” (Poppiel, 2023, Interview)

The initiative responded to a convergence of emerging dynamics: rising international terrorism, rapid technological change, shifting maritime trade patterns, and climate-related risks. Its central aim was to redefine the USCG's mission in light of these complex factors, moving beyond linear prediction models toward non-linear, systems-based perspectives (Treverton & Bikson, 2003; Dewar, 2002).

The project produced five long-range scenarios targeting the early 2020s, each exploring plausible futures within the maritime domain. These scenarios deliberately avoided deterministic forecasting, instead fostering strategic reflection and institutional learning. Notably, one scenario anticipated a large-scale terrorist attack on the U.S. homeland, highlighting the anticipatory value of foresight in national security planning (USCG, 2002; Schwartz, 1996).

"We have these workshops. And we'll just call these the programs. So the input has to be... We have to understand what the problem is, what's the issue. And then we give it up to these teams, and hopefully we can come out with themes. Then, there are several themes you've made, like technology, workforce, talent. There's all these subcategories, which would be the themes. And then from all the themes, say there are five different themes that came out of these workshops. But you have to synthesize, you have to listen. You have to have a number of them, like, four or five. It would depend... when you get these themes, right, then you would further develop them. Further develop into some type of research paper. Whatever the thing is. So we do the research papers, and then we get feedback from the programs need to say, well, the Coast Guard agree with these challenges. And then we would give them the papers such as these executive summaries the perspectives. " (Davenport, 2023, Interview)

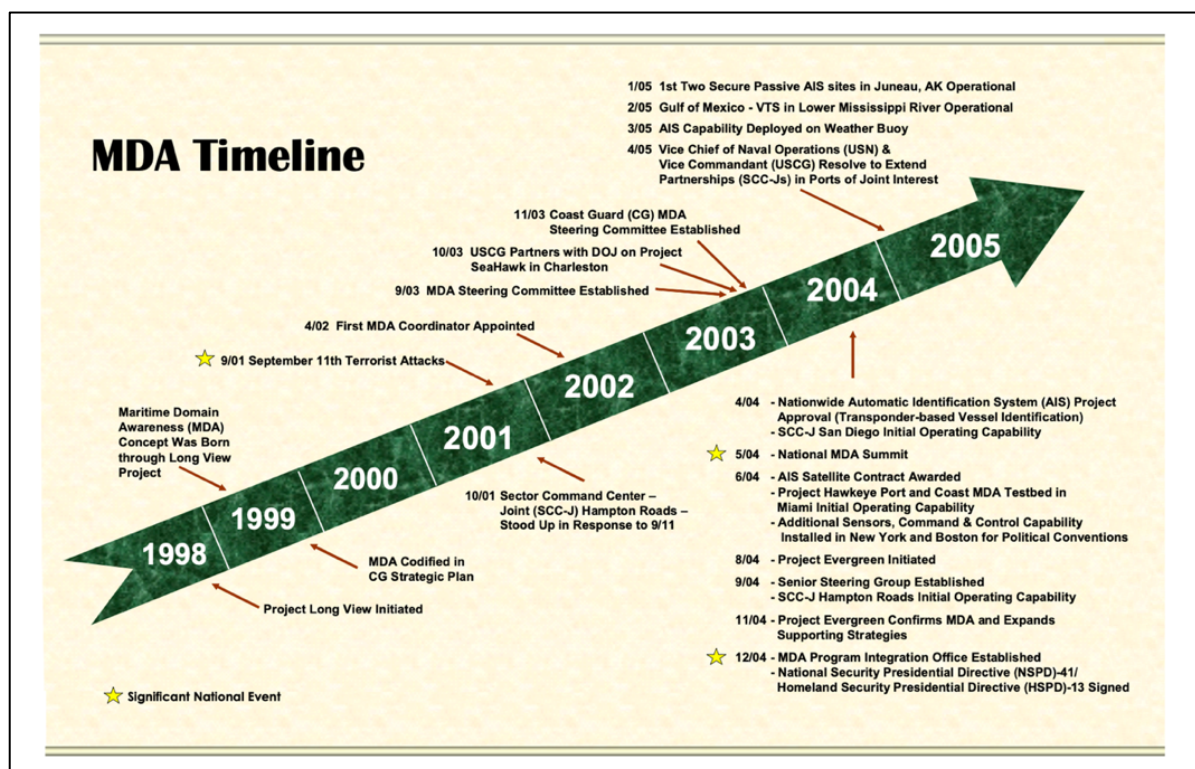
Among its most lasting contributions was the early articulation of Maritime Domain Awareness (MDA)—a strategic concept surpassing surveillance or vessel tracking. MDA envisioned an integrated architecture combining real-time data, intelligence fusion, and decision-support systems to strengthen maritime governance and interagency coordination (National Research Council, 2008). The project proposed a three-pronged implementation model: (1) robust information infrastructure, (2) an operational framework based on civil–military collaboration, and (3) a long-range planning system integrating horizon scanning and scenario development.

These concepts were soon translated into reform. Following 9/11, the Coast Guard launched the Sector Command Centre–Joint (SCC-J) model, expanded by 2004 to San Diego and Hampton Roads. The appointment of a national MDA Coordinator in 2002 and the formation of the MDA Steering Committee in 2003 signalled the shift from conceptual innovation to institutional adoption. MDA's institutionalisation advanced with the approval of the Automatic Identification System (AIS) in 2004 and the introduction of satellite-based monitoring. Meanwhile, Project Evergreen was launched as the Long View's formal successor, embedding scenario planning into organisational culture.

Despite its achievements, the Long View Project revealed a number of strategic limitations. First, certain scenarios—particularly those addressing protracted conflict—were criticised for insufficiently incorporating non-linear complexity and long-tail contingencies. Second, organisational silos between agencies hampered cross-sectoral information flows, diminishing the institutional uptake of scenario outputs. Third, while the project generated strategic insights, it failed to embed them effectively within budgeting and execution systems, thereby exposing the gap between foresight and implementation.

The salience of these issues was magnified in the aftermath of the 9/11 attacks, which catalysed a fundamental reconfiguration of national threat perception and accelerated the institutional demand for anticipatory planning. The launch of Project Evergreen in 2003 was thus not merely a continuation but a transformation—aimed at internalising strategic learning, reducing the gap between foresight and operational practice, and institutionalising adaptive capacity across the Coast Guard’s mission set.

In retrospect, the Long View Project stands as a foundational moment in American maritime strategy. It laid the conceptual and procedural groundwork for a more anticipatory, networked, and resilient security framework—anchored in strategic foresight, interagency collaboration, and long-term institutional coherence amid deep uncertainty.



[Figure 9] The Maritime Domain Awareness Timeline and the Long View Project (USCG, 2005)

8.2.2.2 The Evergreen Programme: Continuity and Evolution in Strategic Execution

In the early 21st century, the USCG found itself increasingly compelled to strengthen its strategic planning capacities amidst a rapidly evolving and uncertain security environment. The terrorist attacks of 11 September 2001, followed by the USCG's incorporation into the newly established DHS, marked a turning point in the organisation's institutional identity and strategic orientation. The preceding Long View programme had revealed structural limitations, particularly its reliance on top-down planning and lack of actionable implementation. In response, the USCG initiated the Evergreen Programme in 2002—an initiative designed to embed strategic foresight across the organisation and to create a robust framework for long-range planning in conditions of deep uncertainty.

Phase	Years	Focus
Evergreen I	2002–2005	Promulgate strategic intent throughout USCG to inform formal strategies and plans, and guide day-to-day activities
Evergreen II	2006–2009	
Evergreen III	2010–2013	Leverage SMEs to determine specific strategies and identify robust strategic needs for the service of the future
Evergreen IV	2014–2015	Develop new scenarios to identify future needs of the Coast Guard
Evergreen V	2016–2022	Strategic forecasting and gaming

[Table 9] The Phases of Project Evergreen (HSOAC, 2022a; p.16)

a. Foundational Methodologies of Early Evergreen

According to internal documentation, the Evergreen Programme was initially developed by the USCG's Office of Strategic Analysis (G-CCX) in collaboration with the Futures Strategy Group (FSG), and employed a structured, three-stage methodology.

1. Interview Phase: Eliciting Cross-Hierarchical Foresight

The first stage involved comprehensive interviews with stakeholders at all levels of the organisation—senior leadership, middle management, and operational personnel. The objective was to identify key drivers likely to shape the future mission environment of the Coast Guard. This inclusive approach fostered collective foresight capabilities and established a shared understanding of emerging challenges and opportunities, laying the cognitive and institutional groundwork for subsequent planning.

2. Scenario Development: Constructing Futures Based on Key Uncertainties

The second phase focused on the development of scenarios based on four core uncertainties: (i) the pace of globalisation, (ii) the resilience of the US economy, (iii) public perceptions of quality of life and security, and (iv) evolving conceptions of sovereignty. Sixteen scenarios were generated, of which five were ultimately selected by the Leadership Council as being most plausible and strategically relevant. These scenarios became essential tools for testing organisational adaptability.

3. Strategic Workshops: Scenario-Based Strategy Formulation and Evaluation

The final stage consisted of intensive four-day workshops in which participants, divided into scenario-specific teams, developed strategic responses to each hypothetical future. The process yielded 49 preliminary strategies, later refined through leadership feedback and evaluation. Eleven core strategies were ultimately selected, each rigorously assessed for feasibility and robustness across divergent futures.

More than a tool for generating strategy, Evergreen became a vehicle for cultivating a culture of anticipatory governance within the USCG. It enabled the development of mechanisms for long-term strategic thinking beyond crisis management and contributed to a planning posture that was simultaneously consistent and adaptive. According to a 2011 evaluation by FSG, Evergreen remained a foundational component of the USCG's strategic architecture, demonstrating the enduring value of embedded foresight capacity.

b. Developmental Phases of the Evergreen Programme

A closer examination of Evergreen's successive phases reveals how the USCG progressively institutionalised strategic foresight and evolved its capacity for adaptive execution.

1. Evergreen I (2002–2005): Institutionalising Strategic Thinking

Launched in the wake of 9/11 and the Coast Guard's integration into DHS, Evergreen I sought to disseminate strategic intent across the organisation and foster a culture of actionable planning. It marked a departure from the Long View's perceived failure—summarised by the

critique, “too much planning, too little action” (USCG, 2005)—and introduced operationally grounded approaches through structured interviews across leadership levels.

2. Evergreen II (2006–2009): Standardisation of Strategic Language and Scenario-Based Thinking

Building upon the foundation of Phase I, Evergreen II focused on institutionalising a common strategic lexicon and diffusing scenario-based planning throughout routine operations. Training and workshops helped establish shared terminologies and analytical frameworks, thereby improving alignment between strategic planning and frontline execution.

3. Evergreen III (2010–2013): Inclusion of Subject Matter Experts and Identification of Strategic Requirements

In this phase, the programme expanded its engagement with subject matter experts to enhance the precision of planning and systematically identify strategic requirements. From 16 developed scenarios, five were selected for in-depth analysis, resulting in 49 draft strategies—11 of which were endorsed by senior leadership as core components of future preparedness.

“so, the navy was using the coast guard futures in 2011, then I knew I was in coast guard and they were never shared with us even internally. It was never widely shared. Or if people used them, it was a very small number of people.” (Davenport, 2023, Interview)

4. Evergreen IV (2014–2017): Expanding Scenario Depth for Complex Threats

Evergreen IV addressed emerging non-traditional threats such as Arctic geopolitics, cybersecurity, and autonomous systems. Scenario outputs increasingly informed decision-making processes, marking a shift from conceptual exercises to real-time strategic planning tools that influenced budgeting, resource allocation, and operational posture.

5. Evergreen V (2018–2022): Simulation-Driven Strategy through Strategic Gaming

The final phase introduced simulation and strategic gaming as core methods for enhancing organisational agility and anticipatory capacity. In collaboration with the Homeland Security Operational Analysis Center (HSOAC), over 300 participants engaged in immersive exercises designed to stress-test strategic decisions and operational responses (USCG, 2022). This approach moved the organisation from formal strategy documents to dynamic, mission-driven execution frameworks.

“US Coast Guard, conducted by itself until Evergreen IV since 2002 and then rent took over Evergreen V which started from the July 2018 to July 2022.” (Davenport, 2023, Interview)

“The Homeland Security Operations Analysis Center, known as HSOAC is a federally funded research and development center for the Department of Homeland Security. I am an HSOAC researcher from the RAND, and a person like Zachary Schulman (current Director of Strategic Foresight at US Coast Guard) is the one step in, as our sponsor.” (Davenport, 2023, Interview)

Each phase reflects a progressive evolution—from the standardisation of strategic language, through expert-informed requirement identification, to the integration of scenario planning and simulation. The Evergreen Programme thus offers a model for how public sector institutions can design and implement strategic frameworks that are responsive to complexity and uncertainty. This evolutionary trajectory, marked by advancements in planning approaches, scope of application, and operational mechanisms, illustrates the maturation of the USCG’s strategic culture. What began as the internalisation of strategic vocabulary evolved into a simulation-based institutional architecture. Evergreen V, in particular, symbolises a departure from traditional document-driven strategy toward a more rigorous, practice-oriented planning model—underscoring a transition from conceptual abstraction to operationalised foresight and institutional agility.

“Of the main purposes of this Evergreen project is to let senior readers prepare for the future by observing potential future scenarios. In other words, Strategy Foresight in the Coast Guard supports the decision-making of the readership. So when we consider the Evergreen project, it is well known not only for its history but also for its effectiveness among other national-level Strategy Foresight projects in other agencies.” (Davenport, 2023, Interview)

8.2.3 USCG Project Evergreen's Structure and Process Cycles

The strategic planning apparatus of the USCG is distinguished by a carefully calibrated institutional rhythm that seeks to harmonise continuity with renewal. At the core of this rhythm lies the Evergreen Strategic Process, an organisational framework intentionally synchronised with the four-year tenure of the Commandant. This structural alignment facilitates the systematic inheritance of strategic direction while allowing for its regular recalibration.

Rather than functioning as a mere chronological marker, the Evergreen Process serves as a substantive unit of strategic operation. Each outgoing Commandant formulates a set of strategic priorities and fiscal parameters to guide their successor, enabling an evolutionary rather than disruptive transfer of leadership. As newly appointed Commandants—typically inaugurated in June—assume office, they commence a holistic reassessment of the strategic landscape. This period entails the identification of emergent priorities, the refinement of strategic vision, and the articulation of short- to medium-term objectives. These elements are consolidated into a new strategic draft, which then forms the basis for policy implementation during the following two years. In the final phase of the term, emphasis shifts to strategic handover and legacy planning, thus reinforcing the cyclical nature of institutional foresight. The real-world application of this model is examined in Section 8.2.4 through the case of Evergreen V.

Historically, the Commandant's Guiding Principles have exerted significant influence on the USCG's strategic trajectory. Though not formally codified as official strategy documents, these principles operate as agenda-setting instruments grounded in the Commandant's experiential insight, institutional imperatives, DHS priorities, and broader contextual intelligence (USCG Evergreen Team, 2020). They function not simply as managerial artefacts but as vehicles of normative guidance, framing strategic intent at the highest level of command.

The Evergreen Process has played a vital role in institutionalising such leadership foresight. For example, during the Evergreen V cycle, a strategic simulation exercise—*Paratus Futurum*—was convened to facilitate scenario-based war gaming. Senior leaders collaborated to explore plausible futures, assess strategic risk, and identify operational responses. This participatory mechanism not only surfaced latent uncertainties but also transformed individual vision into collectively endorsed institutional strategy. In this way, the Evergreen Process renders visible the translation of leadership insight into organisational priorities, risk appraisal,

and stakeholder engagement. If formal strategy documents are the structured manifestation of planning, then guiding principles represent the underlying strategic ethos that animates them.

“This Futurum took the... So, you had the four scenarios. And then you had the head of the Coast Guard's strategy. And then the game had all sorts of injects. What the players had to do was... based upon the strategy, where should they put their resources? Or what should be the focus? When you start the game, you start injecting things. Some things happen, like a hurricane or this. Or Congress says this. Or you have a new president, and this is important. So, you have all these kinds of external... So, you have all these external forces. But primarily, we're talking about the executive branch. And we're talking about the Congress. We're talking about the media or the public... your other stakeholders, let's just say government agencies, other government agencies. So, you have these other forces that affect the Coast Guard. And so, at the end of the game, you should see from these different groups, how did they use their resources that they had.” (Davenport, 2023, Interview)

The framework thus achieves a delicate equilibrium between consistency and innovation. It provides the USCG with a dependable architecture to maintain strategic alignment while equipping it with the agility to respond proactively to a dynamic environment. Notably, Evergreen V integrated scenario modelling based on global and regional trends to evaluate the robustness of strategic plans—deepening foresight capacities and embedding resilience as a design principle.

Beyond its role as a planning tool, the Evergreen architecture functions as an adaptive risk management mechanism. Given the inherent volatility of the strategic domain, iterative revision and organisational learning are essential. Consequently, each Commandant's tenure becomes an institutionalised opportunity for strategic renewal, rather than an episodic rupture or inertial continuation.

“In the game, participants are mainly, like, the USCG. But the leadership... They could be senior people to junior. We get a kind of a good mix of people. Why we have the junior, more junior people, is to do this because they produce the ideas. Strategic thinking. the USCG is realized that they don't want to wait until you're an admiral to start doing strategic thinking. You've got to start... From the beginning.” (Davenport, 2023, Interview)

“That's why we have more junior people there. That they are mixed in with senior people who may think more strategically. So, then they start thinking about this. And then, the whole thing

is, we do all this to prepare for an uncertain future. Yeah, yeah. That is the main goal.” (Davenport, 2023, Interview)

A particularly salient concept emerging from this process is that of strategic rhythm—the capacity of an institution to regenerate its strategic direction at regular intervals while adapting responsively to exogenous shocks. As Mintzberg (1994) has argued, effective strategy comprises not only deliberate planning but also emergent learning and reflexivity. The Evergreen model institutionalises such strategic learning through leadership transitions, scenario-based rehearsals, and foresight-informed simulations. This rhythm of adaptive recalibration provides a compelling blueprint for public and private sector organisations alike.

Illustratively, Evergreen V underwent evaluation by the RAND Corporation to assess the strategic sensitivity of the USCG to complex and compound challenges such as climate change, technological disruption, and geopolitical volatility (Jackson et al., 2021). These exercises, rather than mere exercises in predictive analysis, functioned as structured interventions to test strategic resilience and augment institutional responsiveness (Jackson et al., 2023).

In conclusion, the Evergreen Process may be regarded as the institutional embodiment of strategic rhythm—mediating between disjunction and inertia while enabling sustained autonomy, strategic coherence, and adaptive governance. As such, it stands as a paradigmatic example of embedded foresight and a resilient approach to long-range public sector planning.

8.2.4 The Case of the USCG Evergreen V (2016–2022)

A. Overview

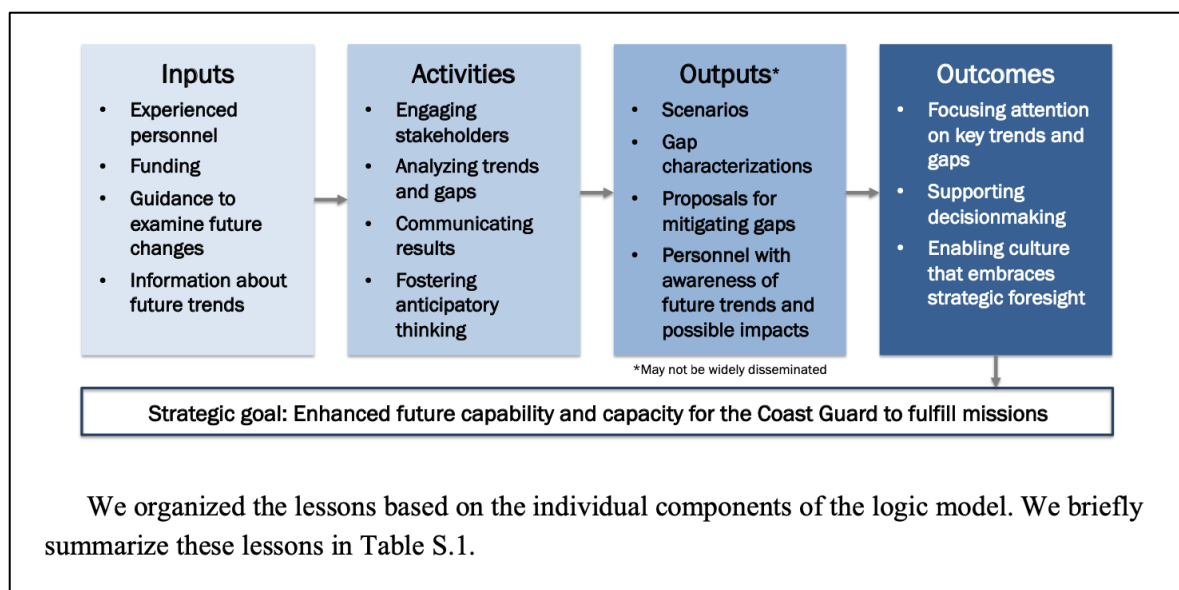
The conclusion of Evergreen V in 2022 marked a pivotal advancement in the institutionalisation of strategic foresight within the USCG. Departing from ad hoc or document-driven planning traditions, Evergreen V formalised a recurring model of strategic renewal through the Four-Year Evergreen Cycle. This cycle aimed to embed strategic thinking as a normative organisational culture, encompassing four integrated phases: (1) scenario-based strategic formulation; (2) expert engagement and command-level consultation; (3) workshop-based strategy testing; and (4) implementation alignment and feedback integration. Together, these phases were designed to reinforce both strategic coherence and operational adaptability.

What distinguishes Evergreen V is its systemic responsiveness to the hybrid challenges of the 21st century—ranging from acute shocks such as pandemics and cyberattacks to chronic stressors including climate volatility and technological disruption. To navigate such complexities, Evergreen V adopted the Decision Making under Deep Uncertainty (DMDU) framework (Lempert et al., 2003; Ben-Haim, 2006), moving beyond deterministic foresight towards strategy evaluation across multiple plausible futures. This shift enabled the USCG to assess the robustness and flexibility of its strategic posture under radically contingent conditions.

Crucially, Evergreen V introduced institutional mechanisms to mitigate the perennial execution–planning divide. Chief among these was the Strategic Legacy Transfer Mechanism, which ensured the deliberate transmission of strategic imperatives between successive leadership cohorts. By preserving strategic memory and aligning evolving priorities, this mechanism strengthened both the stability and agility of USCG governance (RAND Corporation, 2020).

Moreover, the initiative deepened the behavioural integration of foresight through immersive methodologies. In collaboration with the RAND Corporation and the Homeland Security Operational Analysis Center (HSOAC), Evergreen V employed strategic simulations and scenario-based gaming to internalise foresight practices across operational tiers. This shift from strategy as static documentation to strategy as an iterative, reflexive organisational process reflects a broader transformation in USCG’s strategic orientation (Davis, 2002).

This section critically examines the institutional logics, procedural innovations, and meta-analytical insights that informed Evergreen V’s evolution. Drawing upon HSOAC’s longitudinal assessment of prior cycles, it elucidates how Evergreen V addressed legacy limitations and operationalised a more anticipatory, resilient, and learning-centred model of strategic planning. The case offers instructive lessons for public-sector entities confronting similar imperatives for embedded foresight and policy agility.



[Figure 10] Simplified Evergreen Logic Model (HSOAC, 2020; p.9)

B. Core approaches in Strategic Methodologies for Global Scenario Planning Concepts

Strategic foresight is increasingly acknowledged as a critical capacity in navigating the volatility, uncertainty, complexity, and ambiguity (VUCA) of the contemporary global security environment. Yet foresight cannot function in isolation from the institutional apparatus of governance—it must be systematically integrated into the core cycles of planning, programming, budgeting, and execution (PPBE). The USCG Evergreen Programme exemplifies an institutional effort to embed long-range strategic scenario planning within organisational praxis.

However, assessments by the Homeland Security Operational Analysis Center (HSOAC), under the auspices of the RAND Corporation, have identified structural limitations in earlier iterations of the Evergreen initiative—particularly those prior to Evergreen IV. HSOAC’s analysis revealed that while scenario-based strategies were developed, they remained insufficiently connected to mechanisms of policy execution and operational programming. This disjunction became especially apparent during high-impact events such as the 9/11 attacks (2001), the Haitian coup d’état (2004), and Hurricane Katrina (2005), where immediate response efforts overshadowed longer-term strategic objectives. The absence of well-defined pathways for integrating strategic foresight into operational and budgetary systems weakened the institutionalisation of foresight and diminished its utility as a governance tool.

This gap underscored a broader challenge: the misalignment between long-range planning and the real-time demands of crisis management. HSOAC's critique highlighted the pressing need for more robust linkages between foresight processes and PPBE structures, especially in aligning near- and mid-term priority setting with Future Years Homeland Security Programming (FYHSP). Such challenges are not confined to the US; comparative foresight initiatives—such as the UK's National Foresight Programme—have faced analogous difficulties in bridging aspirational planning with actionable policy.

In response, Evergreen V introduced a major conceptual innovation: the Global Planning Scenario (GPS) framework. Unlike conventional scenario methods, GPS is rooted in a capability-based planning philosophy that explicitly aims to convert foresight into executable strategies. The GPS approach integrates three interdependent strategic methodologies: (1) Decision Making under Deep Uncertainty (DMDU), (2) the Stressors-and-Shocks framework, and (3) global strategic simulations designed to stress-test organisational responses to plausible future disruptions. Collectively, these tools advance the strategic maturity of foresight practices by enhancing scenario realism, policy adaptability, and operational resilience.

In sum, Evergreen V's methodological advancement lies in its integrative approach—one that positions foresight not as a peripheral planning exercise but as a foundational component of institutional strategy formulation. This shift offers valuable insights for other public sector entities striving to embed foresight more deeply into their policy systems and execution cycles.

a. Strategic Adoption of Decision-Making under Deep Uncertainty (DMDU)

A central innovation underpinning the methodological sophistication of Evergreen V was the strategic incorporation of the Decision-Making under Deep Uncertainty (DMDU) framework into the Coast Guard's long-range planning architecture. In an era defined by interlocking and unpredictable global challenges—such as climate volatility, shifting geopolitical alignments, and rapid technological disruption—the USCG recognised the diminishing utility of conventional predictive planning. DMDU thus emerged as a foundational analytical paradigm, enabling the Evergreen V initiative to reconstitute strategic coherence and operational viability through the design of adaptive and resilient policy pathways.

First, DMDU offers a structural response to conditions of profound uncertainty, wherein stakeholders lack consensus not only on causal models and probability distributions, but also on normative evaluations of outcomes (Lempert et al., 2003). This conceptualisation is particularly apposite to the Coast Guard's domain, which is increasingly shaped by nonlinear phenomena such as Arctic thaw, contested maritime routes, and emergent technologies. Through DMDU, Evergreen V employed methods that enabled the evaluation of strategic robustness across an ensemble of divergent futures, rather than relying on single-point projections (Haasnoot et al., 2013; Marchau et al., 2019).

Second, the DMDU framework institutionalised participatory decision-making by embedding structured stakeholder engagement into scenario development and policy appraisal. Under Evergreen V, the USCG convened interdisciplinary planning workshops involving policymakers, operational leaders, and subject-matter experts, thus cultivating a deliberative and inclusive planning ethos. This pluralistic approach not only enhanced the legitimacy of strategic options, but also mitigated implementation risks by grounding foresight in operational realities and diverse epistemologies (Dewar et al., 1993).

“If your question is how Evergreen program minimizes the bias of leadership, first, because it's done by us, a third party. We're writing it, not the Coast Guard. Still, it may have some bias. We can't eliminate it all, but it won't have some of that cultural bias from within the service.” (Davenport, 2023, Interview)

Third, DMDU significantly enhanced the flexibility and durability of USCG strategies. Whereas traditional approaches tend to optimise for a presumed baseline future, DMDU methodologies—such as Robust Decision Making (RDM), Adaptive Policy Pathways, and Dynamic Adaptive Policy Pathways (DAPP)—emphasise strategic optionality and adaptive sequencing. These tools have proven especially salient for a dual-mandate organisation like the USCG, which must simultaneously address acute contingencies and sustain long-horizon planning for challenges such as cyber resilience, polar operations, and environmental stewardship (Lempert et al., 2006; Haasnoot et al., 2013).

Fourth, DMDU facilitated the articulation of multi-dimensional scenario analysis. Evergreen V moved beyond linear sensitivity models to construct interdependent scenario matrices reflecting compound uncertainties—such as the entwinement of Arctic geopolitics, indigenous rights, and global energy markets. By enabling the visualisation of strategic trade-offs and cross-sectoral interdependencies, this approach empowered decision-makers to identify

strategies that are both politically feasible and structurally coherent across domains (Marchau et al., 2019).

Finally, and perhaps most critically, DMDU served to reconcile the enduring tension between short-term crisis response and long-term strategic orientation. Historically, episodic shocks—such as 9/11 or Hurricane Katrina—have disrupted institutional continuity. Evergreen V, by embedding contingency-oriented scenario logic into the planning framework, allowed for dynamic reprioritisation without forfeiting overarching strategic goals. In so doing, it established a precedent for integrating foresight with operational responsiveness—embedding agility without undermining coherence (Lempert et al., 2003; Haasnoot et al., 2013).

This strategic adoption of DMDU within Evergreen V represents a paradigmatic shift in public-sector foresight practice—one that aligns with contemporary demands for resilience, adaptiveness, and epistemic inclusivity within policy design and execution.

b. Application of the Stressors-and-Shocks Framework for Identifying Drivers of Change

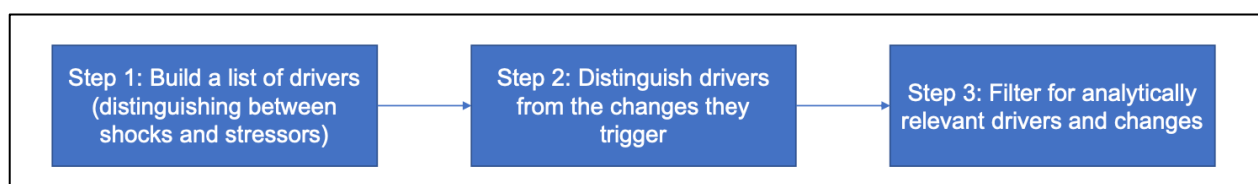
A notable conceptual advancement within the Evergreen V initiative was the strategic incorporation of the Stressors-and-Shocks Framework to systematically identify and evaluate the complex array of change drivers influencing the Coast Guard's operational and strategic landscape. This framework, by distinguishing between gradual long-term pressures (stressors) and sudden high-impact disruptions (shocks), provided the analytical foundation necessary for enhancing institutional agility and strategic foresight. It proved especially pertinent for a multi-mission agency such as the USCG, which must navigate both slow-evolving systemic shifts and rapidly unfolding contingencies (Lempert et al., 2003; Haasnoot et al., 2013).

First, the framework begins with the systematic identification and classification of strategic drivers based on their temporal characteristics. Stressors are conceived as persistent, cumulative forces—such as rising sea levels, the demographic transition, or intensifying cyber vulnerabilities—that gradually erode institutional capacity and preparedness (Marchau et al., 2019). Conversely, shocks refer to acute, often exogenous events—such as catastrophic hurricanes, geopolitical crises, or global pandemics—that can cause sudden systemic disruptions. This binary typology enables strategic planners to tailor response mechanisms in line with the nature and trajectory of the respective threats (Lempert et al., 2003).

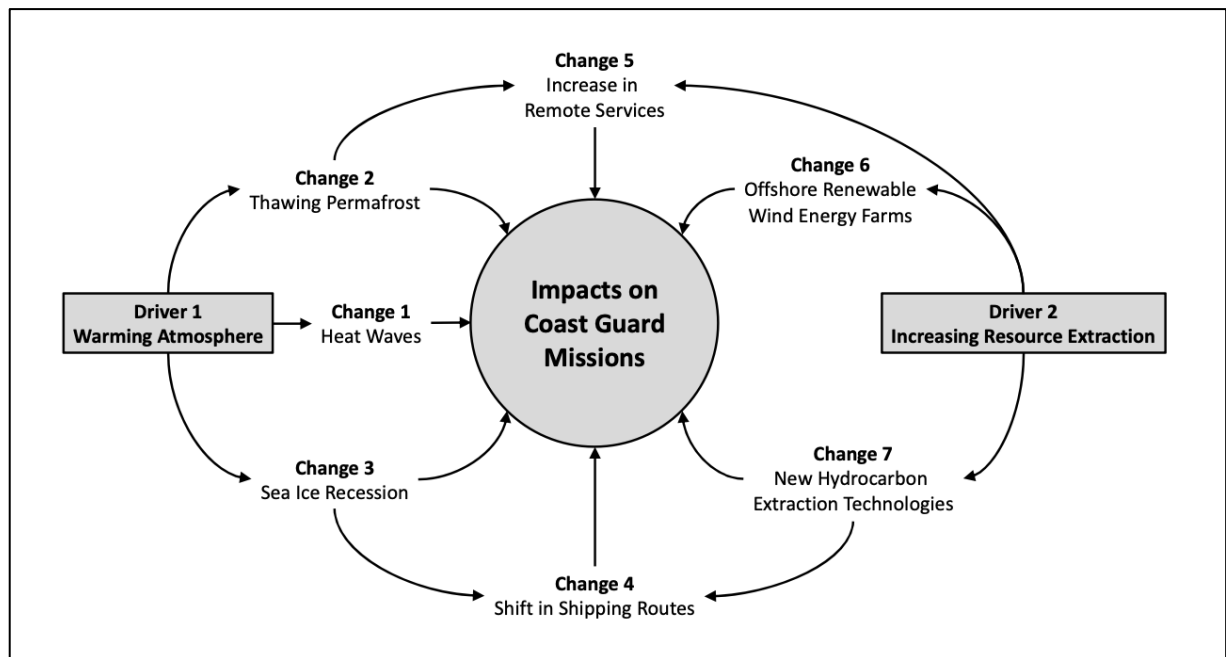
Second, the framework prioritises the operational implications of these drivers rather than treating them as abstract environmental data. It explicitly maps the ways in which stressors and shocks may impact key organisational functions, such as statutory obligations, resource allocation, and mission continuity. For instance, ecosystem degradation as a long-term stressor may necessitate shifts in search and rescue protocols, while a cyber-attack on critical maritime infrastructure as a shock could demand rapid mission reconfiguration. This outcome-oriented methodology enhances the USCG’s capacity to make pre-emptive rather than reactive strategic adjustments (Haasnoot et al., 2013).

Third, a key contribution of the framework lies in its facilitation of prioritisation. By filtering for decision-relevant drivers, the Coast Guard is better positioned to focus analytical and strategic resources on a subset of variables most pertinent to institutional performance. This prioritisation is aligned with broader planning techniques, including DMDU and Adaptive Policy Pathways, and supports more coherent integration with the PPBE process. For example, the strategic implications of Arctic resource competition—encompassing sovereignty disputes and transnational shipping—require proactive deployment of USCG assets, a task that demands both foresight and coordination (Lempert et al., 2003; Marchau et al., 2019).

Fourth, the Stressors-and-Shocks Framework plays a pivotal integrative role in the Evergreen V planning process. It serves not merely as a diagnostic tool, but as a mechanism that bridges the long-range foresight agenda with short-term responsiveness and operational design. Its influence on multidimensional scenario development allowed Evergreen V to synthesise political, technological, ecological, and societal factors into unified planning architectures. Echoing the approach of the UK’s Foresight Programme, the framework institutionalised a form of adaptive governance that enhances resilience and strategic learning (GO-Science, 2017). In doing so, it contributed decisively to the Coast Guard’s capacity to manage uncertainty as a permanent feature of its strategic environment.



[Figure 11] Stressors-and-Shocks Framework Steps (HSOAC, 2020; p.26)



[Figure 12] Notional Causal Chain from Drivers to Effect on USCG Missions (HSOAC, 2020; p.27)

c. Deriving Strategic Response Measures through Global Scenario Simulations

A critical innovation in the Evergreen V programme lies in its systematic derivation of strategic response measures through Global Planning Scenarios (GPS) simulations, grounded in the scenario family approach. This method enables the Coast Guard to anticipate and prepare for a range of plausible futures by integrating long-term systemic pressures (stressors) with abrupt, high-impact events (shocks). In doing so, it fosters a simulation-based strategic process that enhances organisational agility, coherence, and resilience under deep uncertainty.

First, the scenario family approach forms the conceptual foundation of GPS simulations. Using a 2×2 matrix that intersects two independent and critical stressors, it generates four distinct future environments. Each quadrant reflects a unique strategic landscape, allowing the USCG to examine how different interactions between global drivers—such as climate volatility and economic instability—may influence resource allocation, operational structures, and technology priorities (Lempert et al., 2003; Haasnoot et al., 2013). This approach facilitates the assessment of trade-offs under non-linear change, enabling anticipatory decision-making.

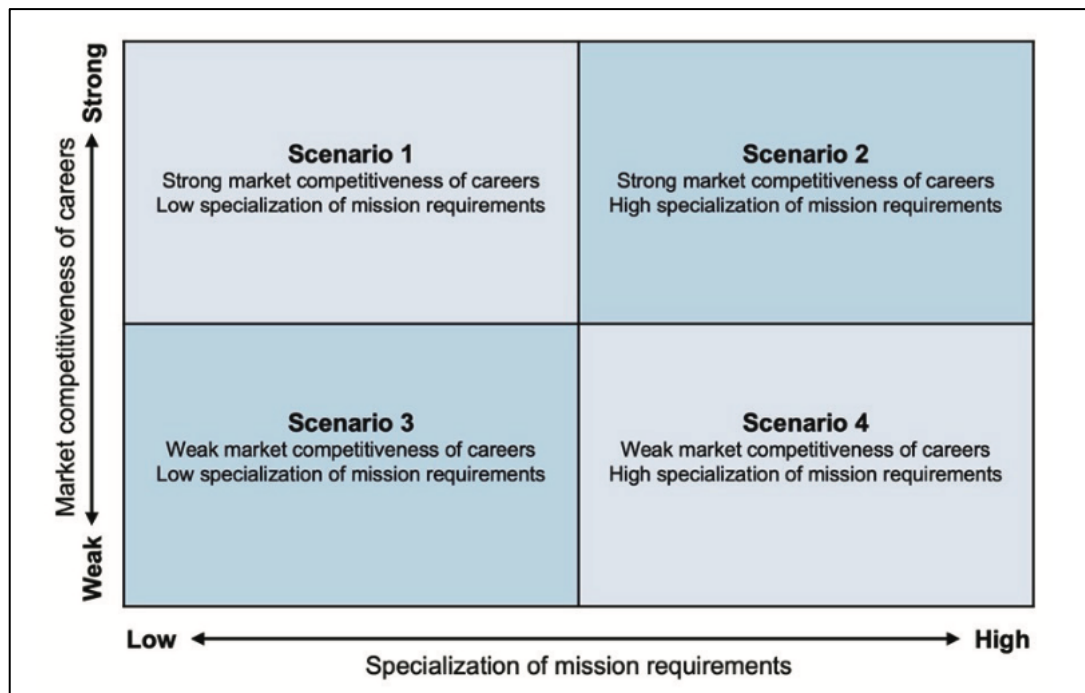
Second, the analytical depth of each scenario is further enhanced by integrating tailored shock narratives. While stressors provide structural context—e.g., demographic shifts, ecological decline, or technological disruption—shocks introduce disruptive events such as natural

disasters, cyberattacks, or mass migration. These high-impact disruptions test institutional adaptability and require rapid recalibration. Embedding such shocks within long-term scenarios increases realism, stress-tests strategic flexibility, and simulates the agency's ability to maintain operational continuity under crisis conditions (Marchau et al., 2019).

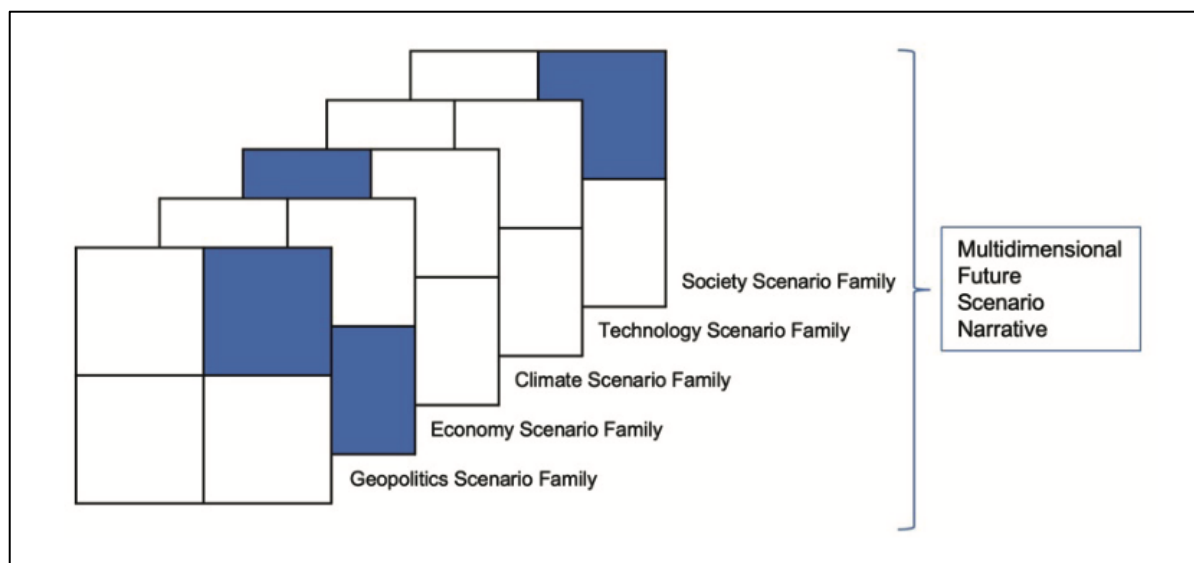
Third, the hybrid application of scenario families and shock narratives enables the derivation of strategically viable response options. Each scenario functions as a decision-space, guiding the formulation of integrated policy pathways that bridge long-term mandates with short-term exigencies. For example, a scenario combining accelerated Arctic warming with heightened geopolitical rivalry might prompt the pre-positioning of assets, the revision of search-and-rescue protocols, and the reallocation of R&D investments towards autonomous systems. In parallel, contingencies for pandemic outbreaks or energy crises necessitate multi-level coordination mechanisms that reinforce strategic robustness across temporal scales (Haasnoot et al., 2013).

Fourth, the simulation process follows four analytical stages: (1) identifying key stressors and shocks; (2) constructing internally consistent narrative frameworks; (3) developing adaptive responses through interdisciplinary consultation; and (4) translating insights into policy design and institutional planning. This iterative methodology not only explores diverse futures but allows for real-time strategic adaptation. It anchors foresight in practical governance domains, such as capability development, workforce planning, and cross-sector integration (Lempert et al., 2003; RAND Corporation, 2020).

In summary, the GPS simulation framework represents a significant advancement in strategic planning under uncertainty. By embedding the scenario family method and dynamic shock narratives into institutional practice, Evergreen V equips the USCG with resilient, evidence-based policy tools. These simulations are operational rather than theoretical, fostering alignment between strategic intent and adaptive capacity. The approach offers a replicable model for public agencies navigating complex and uncertain futures, showing how simulation-based foresight can support long-term sustainability and anticipatory governance (Lempert et al., 2003; Haasnoot et al., 2013; Marchau et al., 2019).



[Figure 13] Example of a Scenario Family for the Workforce Decision Space (HSOAC, 2022a; p.9)



[Figure 14] Combining Scenario Families into a Single Multidimensional Future Scenario Narrative (HSOAC, 2022a; p.10)

d. Timeline and Strategic Foresight Activities of Evergreen V

The Evergreen V programme was designed as a sequentially structured, four-year initiative aimed at enhancing the USCG strategic response capacity amid an era of accelerating uncertainty. The intensification of global power competition, the reconfiguration of maritime threats under climate change, the onset of technological transformation, and the instability of

global supply chains have collectively necessitated a reassessment of the USCG's strategic identity and institutional resilience (RAND Corporation, 2023; Nye, 2020).

“The simulation game in itself is nothing, right? It's what you are trying to do with the game. So we were using this game to test out the strategies against whatever the subject may be, right? And so the game we were using was a planning game — how to use resources to identify what resources you will need 20 years from now. And is the strategy that they're using right now still going to be good, right? Are there holes in it? Are there flaws? So that they know when they get 10 or 20 years down the line, that strategy is not going to work anymore — so they need to revise it.” (Davenport, 2023, Interview)

What most distinctly sets Evergreen V apart from traditional defence planning frameworks is its civilian-informed, flexible organisational culture and the incorporation of gamified learning environments to foster cross-functional understanding. Thus, Evergreen V is not merely an internal policy instrument but also a demonstrable application of institutional change theory and strategic choice theory within the context of national security governance (Greenwood and Hinings, 1996; Child, 1972). This section examines the stepwise implementation of Evergreen V, evaluates its contributions to enhancing the strategic capabilities of the USCG, and considers its potential scalability as a best-practice model for other federal entities and international security institutions.

Year 1: Structural Foundation and Environmental Scanning

The initial year of the programme was dedicated to establishing an analytical foundation through extensive environmental scanning. In collaboration with internal practitioners and external experts, the USCG undertook an in-depth exploration of four major megatrends: climate change, technological innovation, economic instability, and geopolitical transformation. The outcome of this collaborative effort was the formulation of four alternative future scenarios, which served as the conceptual basis for subsequent strategy development.

During the first year, strategic foresight extended beyond the realm of prediction to become a pivotal mechanism for enhancing organisational preparedness and adaptive capability. The environmental scanning workshops conducted by the USCG functioned as a practical platform for fostering organisational agility in the face of multifaceted external drivers. These workshops significantly expanded cognitive flexibility across the institution, enabling the formulation of more nuanced and context-sensitive strategic responses.

Critically, the workshops generated four plausible future scenarios designed to illuminate the spectrum of uncertainties that the USCG might confront. These scenarios became the intellectual scaffolding for subsequent institutional decision-making. According to post-implementation assessments, proactive engagement with climate resilience and technological preparedness notably enhanced the organisation's strategic competence, equipping it with a more agile and anticipatory decision-making architecture.

Ultimately, the environmental scanning phase of Evergreen V played a formative role in embedding strategic foresight into the institutional fabric of the USCG. It facilitated preparedness for macro-level trends across environmental, technological, geopolitical, and economic domains, while simultaneously cultivating creative strategic thinking and heightened organisational responsiveness. As a result, the USCG became capable not only of systematically identifying emerging risks but also of discerning latent opportunities—thereby advancing its overall adaptive capacity. Strategic foresight, deeply ingrained in the organisation's culture, emerged as the cornerstone for strengthening both creative responsiveness and institutional agility (Godet, 2001).

Year 2: Strategic Problem Definition Based on Scenario Planning

In the second year of the Evergreen V initiative, the USCG undertook an extensive effort to define strategic problems grounded in scenario-based foresight. Building upon the scenario frameworks developed in Year 1, the USCG facilitated in-depth discussions concerning mission redefinition, capability assessments, and emerging organisational challenges under each scenario. A central activity of this phase was the Strategic Problem Definition Workshop, during which the USCG delineated future-oriented responses to maritime security threats, identified core strategic challenges, and refined a series of hypothetical strategic propositions. This process, deeply embedded in strategic foresight practices, enabled the USCG to generate practical solutions to a spectrum of plausible future crises, thereby enhancing institutional preparedness against uncertainty. Each scenario served as a platform for simulating high-impact events, allowing the USCG to anticipate critical decision points and refine response strategies accordingly.

“We would give them the scenarios. ‘This is the backdrop —This is the world you’re living in, or this is the world you’re operating in’ And then we would run some more workshops with

subject-matter experts in the service at all levels — from the operators to the policymakers, all ranks, from the junior officer.” (Davenport, 2023, Interview)

Through the simulation of diverse crisis scenarios, the USCG was able to define strategic problems with greater clarity and derive long-term strategic hypotheses. These hypotheses subsequently formed the basis of future strategic planning, serving as a crucial bridge between anticipatory thinking and tangible institutional transformation. This approach aligns with academic perspectives that position foresight as a central mechanism for managing institutional change within complex adaptive systems (van der Heijden, 2005; Rhisiart et al., 2015).

The outcomes of this phase extended well beyond the mere identification of potential threats. By fostering strategic agility, the USCG was equipped to respond to future maritime threats with enhanced precision and foresight-informed strategies. In this regard, the workshop exemplified the practical application of anticipatory governance within a security context and demonstrated the efficacy of scenario planning as a tool for building institutional resilience.

Year 3: Development of CONCEPT 2040 – A Strategic Foresight-Driven Transformation

The third year of the Evergreen V initiative represented a pivotal inflection point in the strategic trajectory of the USCG, marked by the development of CONCEPT 2040—a scenario-based roadmap for strategic design. This integrated strategic blueprint encompassed force structure, operational doctrine, cultural transformation, and long-term investment planning. Four dedicated design teams were tasked with constructing viable strategic models rooted in plausible threats such as geopolitical instability, cyber conflict, and climate-induced maritime disasters (Curry and Hodgson, 2008).

A central feature of the CONCEPT 2040 process was the incorporation of strategic gamification into foresight workshops. Each team engaged in scenario-driven simulation exercises that enabled the real-time testing of strategic choices under shifting threat environments. These simulations facilitated interdepartmental learning, enhanced situational adaptability, and exposed critical tensions between conceptual design and executable strategy (Rhydderch, 2009). Furthermore, they introduced empirical feedback loops to iteratively assess the adaptability of strategies and refine underlying operational assumptions. The process also emphasised the centrality of advanced technologies—such as artificial intelligence, big data, and autonomous systems—in shaping a resilient digital maritime security infrastructure

(Manyika et al., 2017). Alongside this, organisational culture and leadership development were advanced in tandem, promoting strategic autonomy and capability-based leadership (Kotter, 1996; Schein, 2010).

The CONCEPT 2040 development workshops thus represented a transformative moment in clarifying the USCG's long-term strategic orientation. Strategic foresight served as the foundational methodology for crafting actionable concepts tailored to multiple plausible futures, thereby enabling the organisation to enhance its operational resilience amidst volatility and uncertainty (Godet, 2000). Significantly, CONCEPT 2040 evolved beyond a short-term contingency tool to become a comprehensive framework for organisational architecture and strategic planning. It has since become a key referential guide for the formulation of executable strategic plans (Popper, 2008). In this regard, the third year may be characterised as a phase of strategic transition—wherein conceptual foresight was effectively translated into the institutionalisation of strategic feasibility (Miles et al., 2016).

Year 4: Strategic Simulation through Paratus Futurum

In the final year of the Evergreen V programme, the USCG launched Paratus Futurum—Latin for “Prepared for the Future”—an immersive strategic simulation designed to enable senior leaders to engage with decision-making under conditions of deep uncertainty, constrained resources, and evolving maritime threats.

“Gaming was focused only on year four for Evergreen 5. And according to the report, this report, this is mainly to support engagement among the senior leaders to inform the next four years of the Evergreen initiative.” (Davenport, 2023, Interview)

Far more than a pedagogical exercise, Paratus Futurum served as a practical application of foresight methodology, closing the gap between abstract strategic thinking and operational decision-making. Participants were immersed in high-stakes scenarios involving digital maritime surveillance, shifting Arctic sea routes, and regional geopolitical conflicts. These simulations not only tested adaptive leadership under duress but also deepened institutional learning and strategic dialogue.

The design of the exercise was deeply informed by the principles of strategic foresight, particularly those associated with anticipatory governance and scenario-based planning.

Participants were required to craft adaptive strategies across multiple plausible futures, using each scenario as a testbed for evaluating the robustness of decision-making. The emphasis lay on enhancing strategic cognition amidst complexity—participants confronted systemic stressors such as digital transformation, asymmetric maritime threats, and weakened international partnerships, necessitating holistic systems thinking.

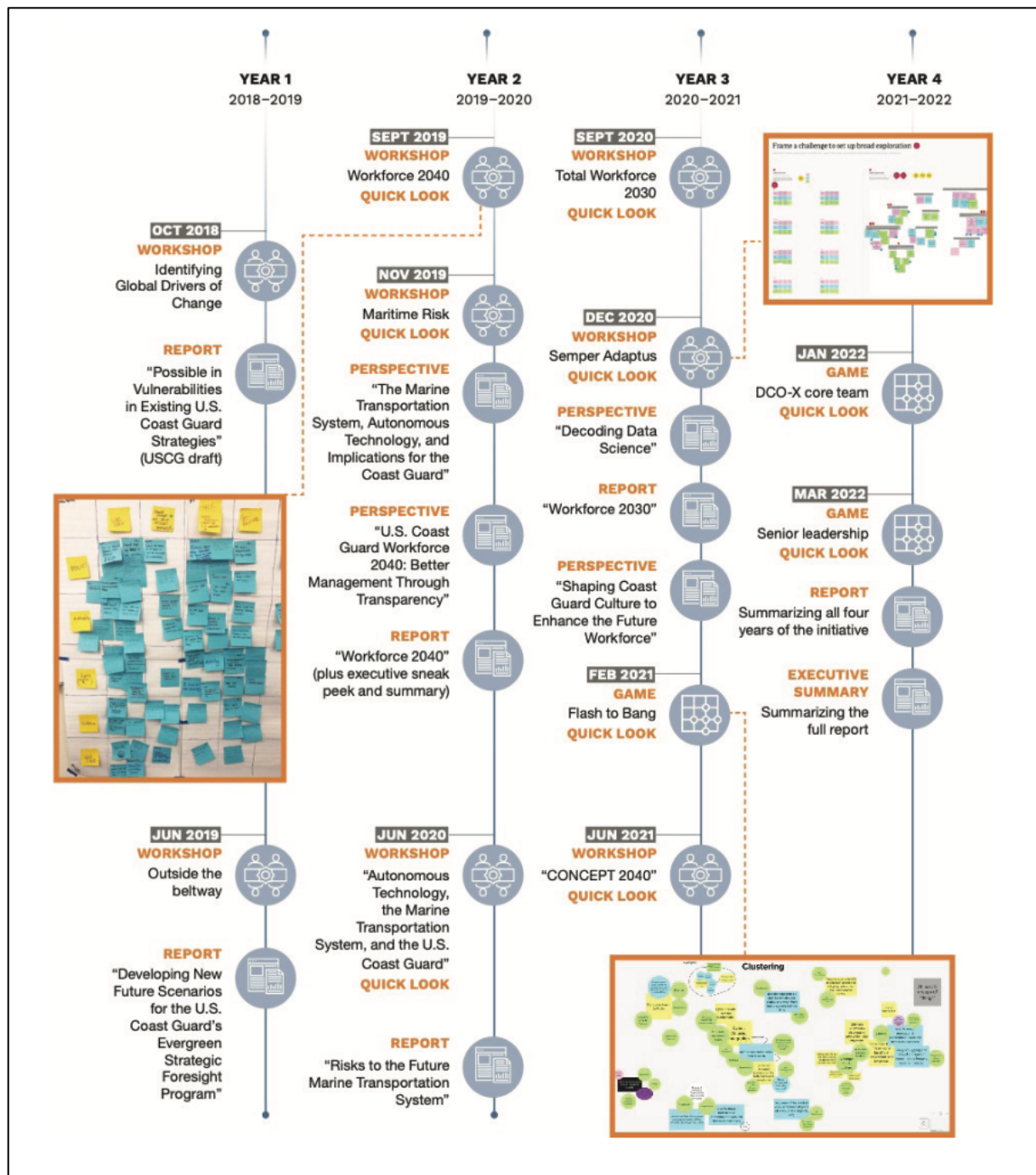
Critically, Paratus Futurum also functioned as an institutional mechanism to embed foresight within defence policy. It challenged leaders to make consequential decisions regarding mission execution, international coordination, and contingency planning—thus operationalising foresight in tangible policy contexts (Cuhls, 2020). Through iterative strategy testing and post-exercise analysis, participants refined their ability to balance resource allocation with emergent risks, thereby fostering a culture of deliberative strategic reasoning.

The simulation further promoted collective reflection and cross-functional learning—essential capacities in complex adaptive systems such as national security organisations (Inayatullah, 2008). Lessons derived were subsequently integrated into USCG’s strategic planning cycles, influencing long-term doctrinal updates and enhancing institutional resilience against emerging threats.

The lasting legacy of Paratus Futurum lay in its success as a catalyst for institutional transformation. It embedded a culture of strategic dialogue within the USCG and elevated foresight-based leadership development as a core organisational priority. The initiative demonstrated how participatory futures methodologies can stimulate transformative leadership and adaptive institutional design (Habegger, 2010; Bourgon, 2009).

Significantly, insights from the exercise contributed to recalibrating the USCG’s strategic orientation, particularly in relation to geopolitical volatility and transnational maritime risk. In this respect, foresight evolved from a conceptual framework into an embedded organisational capability, influencing the broader architecture of long-term strategic planning (Van der Heijden, 2005; Cairns et al., 2013).

Ultimately, Paratus Futurum exemplified how immersive, scenario-based foresight can be institutionalised as a cornerstone of anticipatory governance. It offered a compelling model for other national security organisations seeking to enhance strategic preparedness, embed agile decision-making, and shape future-ready governance systems (Rhisiart et al., 2015; Weber, 2006; OECD, 2019; Johnston, 2018).



[Figure 15] Timeline of Evergreen V Events and Products, 2018-2022 (HSOAC, 2022b; p.6)

8.2.5 Concluding Implications: A Three-Pillar Assessment – Mission Alignment, Evaluation Embedding, and Talent Strategy

The USCG Strategic Foresight Programme, Evergreen V, is widely regarded as a paradigmatic case of institutionalising foresight beyond mere predictive exercises. Rather, it exemplifies the structural refinement of organisational strategy systems and the cultivation of a foresight-oriented, learning-centric culture across all levels of the institution. This section synthesises the core strategic insights derived from the programme’s year-by-year progression—strategic sensemaking and environmental scanning (Year 1), scenario-based problem framing (Year 2), future strategic architecture design (CONCEPT 2040, Year 3), and scenario simulation training (Paratus Futurum, Year 4)—through the lens of the following three structural pillars: (1) Mission Alignment, (2) Evaluation Embedding, and (3) Talent Strategy.

1. Mission Alignment: Strategic Consistency with Organisational Goals

The first year of Evergreen V focused on establishing a strategic foresight foundation by cultivating internal cognitive readiness and conducting a structured environmental scan. Through the identification of four plausible future scenarios—encompassing climate volatility, technological disruption, geopolitical instability, and economic uncertainty—USCG laid a conceptual groundwork for long-term strategic recalibration. This phase marked a critical epistemological shift, encouraging the organisation to move beyond operational responsiveness towards anticipatory, proactive alignment with emerging complexities.

The second year’s scenario-based problem-framing workshop further operationalised this foundation, serving as a structural mechanism for reconfiguring USCG’s mission in light of long-range drivers. It realigned the organisation’s strategic orientation from a short-term maritime operations focus to a future-oriented posture capable of addressing compound risks such as climate change, technological uncertainty, and geopolitical fragmentation.

The third-year initiative, CONCEPT 2040, institutionalised this mission realignment. It involved scenario-based planning to define strategic operating models and force structures that ensured continuity of core organisational purposes amidst divergent futures. This design not only exemplified an operational manifestation of strategic agility but also demonstrated that foresight-informed planning can substantively reinforce mission coherence in volatile contexts.

2. Evaluation Embedding: Institutionalisation of Strategic–Operational Feedback Mechanisms

Across all phases of Evergreen V, there was a consistent effort to transcend linear strategic formulation by embedding evaluation as a continuous institutional function. The initial environmental scanning exercise in Year 1 informed an iterative learning loop rather than a static intelligence repository, framing foresight as an evaluative process rather than a predictive end-state.

By Year 2, post-workshop analyses restructured the entire problem-framing-to-execution pipeline, which informed Year 3's CONCEPT 2040 with robust evaluative assumptions. The fourth year's Paratus Futurum simulation marked the culmination of this feedback architecture. Senior leadership engaged in high-stakes strategic decision-making under volatile scenario conditions, generating immediate feedback loops that informed budgeting, policy design, and doctrinal adjustment.

This feedback mechanism transitioned evaluation from a retrospective assessment to a structural enabler of strategy execution. The simulation institutionalised foresight as a testable, adaptive function, with evaluative outputs dynamically reintegrated into policy formulation processes, thereby demonstrating the feasibility of foresight as a core component of institutional learning.

3. Talent Strategy: Institutionalising Strategic Learning and Leadership Capacity

Evergreen V positioned strategic foresight not as the domain of a specialist elite, but as a collective cognitive infrastructure rooted in organisation-wide learning and collaborative engagement. During Year 1, the participatory environmental scanning workshops promoted cognitive flexibility across diverse departmental actors, laying the foundations for broad-based strategic awareness.

In Years 3 and 4, over 300 participants—including internal staff and external experts—engaged in simulation-based exercises and scenario planning, embedding strategic reasoning and deliberative foresight capacity at multiple organisational strata. The integration of simulation-based learning, strategic gamification, and interdisciplinary dialogue catalysed the emergence of a culture of strategic conversation and institutional reflexivity.

These processes moved beyond capacity building, fostering long-term leadership development and institutionalising a participatory futures approach. The Paratus Futurum simulation, in particular, exemplified how foresight methods can diffuse across hierarchical levels and policy domains to stimulate innovation, strengthen adaptive leadership, and embed resilience within organisational culture.

Through its year-by-year progression, Evergreen V successfully established an integrative architecture that connected strategic planning, operational execution, real-time evaluation, and institutional learning. In doing so, it became a model for embedding foresight within public institutions via the three foundational pillars of Mission Alignment, Evaluation Embedding, and Talent Strategy.

This empirical analysis provides substantive academic and practical value. It demonstrates that foresight is not merely a predictive tool but an institutional mechanism for navigating uncertainty, redesigning mission systems, and fostering long-term resilience. Importantly, the programme offers a replicable blueprint for designing actionable foresight systems capable of balancing agility, deliberation, and structural coherence within complex governance environments.

8.3 Conclusions

This chapter has examined two emblematic applications of strategic foresight within the institutional landscape of the US federal government: the Forest Futures Horizon Scanning Project of the USDA Forest Service, and the Evergreen Strategic Foresight Programme of the USCG, a component of the DHS. Despite operating in markedly different policy arenas—environmental governance and maritime security, respectively—both initiatives demonstrate the practical viability of embedding foresight into core organisational functions in a manner that enhances agility, learning capacity, and anticipatory responsiveness.

From the comparative analysis of these cases, three principal conclusions may be drawn.

First, strategic foresight proves most impactful when institutionally integrated across the organisation's fundamental operations, including policy planning, programme evaluation, and operational strategy. Both agencies moved beyond relegating foresight to isolated analytical

units, instead deploying long-range mission frameworks (CONCEPT 2040), scenario-driven problem definition workshops, and strategic simulation exercises (Paratus Futurum) to embed anticipatory thinking across organisational tiers. Second, strategic foresight operates not merely as a technical instrument but as both a cognitive and procedural catalyst, reshaping how organisations think, plan, and respond. Through the use of scenario planning, environmental scanning, and simulation modelling, both agencies demonstrated an increased capacity to maintain strategic direction amid growing uncertainty and complexity. This underscores foresight's role as a practice-oriented tool that facilitates iterative refinement and actionable policy design rather than simply predictive accuracy. Third, the institutionalisation of foresight depends as much on talent strategy and organisational culture as it does on analytical sophistication. The most enduring impact in both cases arose from deliberate efforts to democratise foresight and cultivate a culture of strategic learning across the organisation. Initiatives such as interdepartmental training, simulation-based leadership development, and informal dialogue platforms were central to embedding foresight as a collective competence rather than a niche expertise.

Taken together, these findings suggest that the value of strategic foresight lies not in its predictive precision per se, but in its capacity to transform how public institutions think, learn, and adapt. When thoughtfully designed and operationally embedded, foresight enables more resilient and responsive decision-making in the face of profound uncertainty, thereby contributing to long-term policy coherence and institutional durability.

The U.S. federal system already contains numerous latent building blocks for a foresight-oriented governance paradigm. The pressing task ahead is to consolidate these fragmented efforts into a coherent and sustainable institutional infrastructure. Future research and policy experimentation should thus not only advance foresight methodologies but also interrogate the organisational conditions—leadership, culture, incentive structures—necessary for foresight to take root as an enduring capability.

In this regard, the next chapter (Chapter 9) turns to the UK, exploring how strategic foresight is being institutionalised within a different national context. Focusing on the UK GO-Science and the MOD's Defence Futures programme, it provides a comparative investigation of how foresight is embedded within policy systems beyond the U.S., and offers insights into the diverse pathways and contextual conditions underpinning successful foresight integration across public sector institutions.

Chapter 9 Research & Findings 3:

United Kingdom Cases

This chapter provides an empirical analysis of strategic foresight initiatives implemented at the central government level in the UK, with a particular focus on how UK-style foresight governance has been institutionalised, operationalised, and integrated into the policymaking process. Situated in continuity with the examination of US cases in Chapter 8, this analysis offers a comparative perspective on how strategic foresight is implemented differently across national public sectors, depending on the policy domain, organisational structure, and politico-administrative context.

The chapter has two principal objectives. First, it seeks to empirically identify the institutional structures, operational mechanisms, and implementation processes through which strategic foresight has been applied within distinct policy fields in the UK government. Second, it aims to derive theoretical and practical insights to inform the design of an integrated and actionable foresight-based policy mechanism.

To this end, the chapter examines two major strategic initiatives situated in markedly different policy domains, each of which reflects a distinct yet complementary approach to the application of foresight within the UK public sector.

Section 9.1, “Defence Futures,” focuses on the foresight activities undertaken by Defence Futures, a strategic body operating under the UK Ministry of Defence (MOD) and formerly known as the Development, Concepts and Doctrine Centre (DCDC). The section places particular emphasis on the Global Strategic Trends (GST) report series, which serves as a quintessential example of institutionalised foresight practice designed to support long-term strategic planning in an increasingly complex and uncertain global security environment. In addition to publicly available national archives and research materials, this section draws on insights from an interview with Colonel Joachim Isacson OBE, Assistant Head of the Strategic Foresight Team within Defence Futures, as well as supplementary materials he provided. Through this combined empirical base, the analysis explores how foresight has been systematised, embedded, and strategically mobilised within the UK defence sector.

Section 9.2, “Urban Futures,” shifts the focus to the Foresight Programme developed within GO-Science under the Department for Science, Innovation and Technology (DSIT). This programme represents the UK government’s officially recognised national-level foresight initiative. In addition to existing scholarly and policy literature, the section draws on interviews with current and former UK civil servants, scientists, and practitioners directly involved in the design and operation of the programme. Through these empirical insights, the analysis explores its historical evolution, organisational integration, strategic transformations, and institutional challenges. This examination is particularly significant in light of the study’s broader argument that the GO-Science Foresight Programme functions as a key institutional platform for operationalising an integrated foresight-policy mechanism within the UK governance system.

Through this multi-layered qualitative approach, the study examines how two public bodies—pursuing distinct policy goals of national security and urban-civic enhancement—nonetheless share common features in their application of foresight, particularly regarding the institutionalisation of long-term thinking and the generation of strategic insights.

Ultimately, this chapter aims to offer evidence and implications for understanding how the UK government’s foresight programmes may be further transformed into more effective policy mechanisms, and how complexity-informed policy design may be practically realised through embedded strategic foresight frameworks.

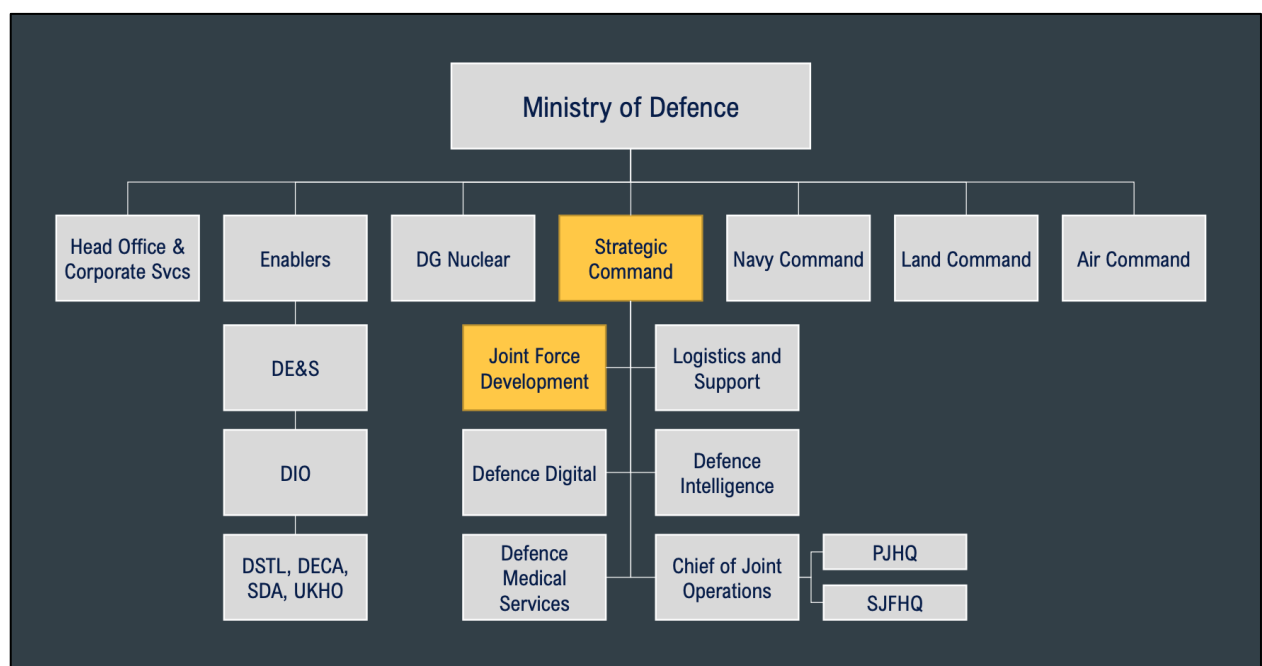
9.1 Defence Futures

This section provides an in-depth examination of the UK MOD’s institutional approach to strategic foresight, with particular emphasis on the long-established work of Defence Futures—formerly known as the Development, Concepts and Doctrine Centre (DCDC). As the principal strategic foresight body within the MOD, Defence Futures plays a pivotal role in generating future-oriented intelligence and shaping long-term defence strategy in response to a rapidly evolving global security landscape.

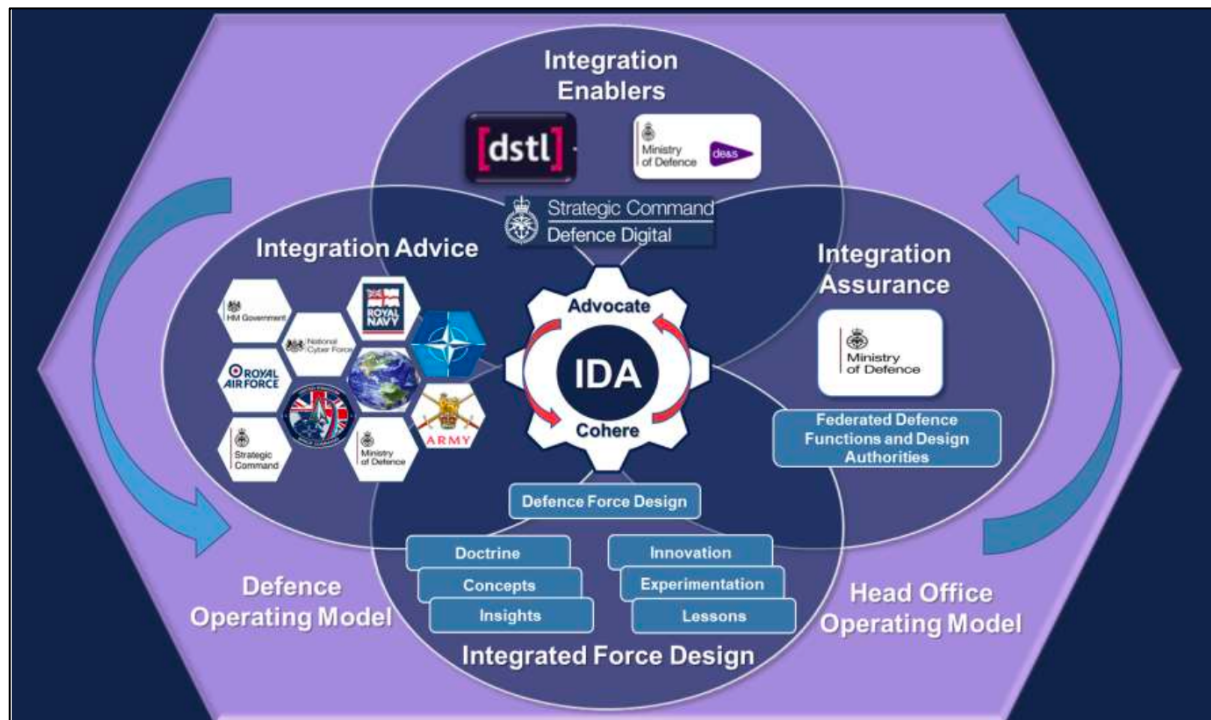
At the core of this institutional effort lies the GST report series, which has evolved over two decades into a foundational foresight instrument for defence planning and cross-governmental consultation. As both a methodological framework and a policy-relevant output, GST exemplifies how foresight can be institutionalised, iterated, and applied to support anticipatory governance within national security.

The analysis begins in Section 9.1.1 by identifying the vision and strategic orientation of foresight within Defence Futures, including its conceptual underpinnings and long-term policy relevance. Section 9.1.2 then explores the core outputs of the foresight process, particularly the Global Strategic Trends series, followed by three sub-sections: the historical development of the series (9.1.2.1), its primary missions and purposes (9.1.2.2), and the core mechanisms that support its production and dissemination (9.1.2.3). The section proceeds in 9.1.3 to a focused case study on the seventh and most recent edition of GST, outlining its overarching framework, key analytical processes, and principal findings. This case exemplifies the operationalisation of foresight within a defence context and reflects both internal strategic shifts and global trend analysis. In Section 9.1.4, the discussion broadens to address collaborative foresight practices, examining how Defence Futures contributes to national security planning and international alliance coordination through shared strategic assessments and multilateral engagements. Finally, Section 9.1.5 offers a set of concluding implications, presented through a three-pillar analytical lens—Mission, Evaluation, and Talent—to assess how Defence Futures functions not only as a foresight body but also as a strategic enabler of defence policy innovation and institutional learning.

Taken together, this section provides a comprehensive account of how foresight is embedded, operationalised, and aligned with the UK’s defence and security objectives, while offering broader insights into the governance of strategic uncertainty in public institutions.



[Figure 16] Defence Futures (Formerly DCDC, 2024) in Strategic Command, MOD (DCDC, 2024)



[Figure 17] Integration Design Authority Organisational Framework (Strategic Command, 2013)

9.1.1 Vision and Strategic Foresight Strategy of MOD Defence Futures

9.1.1.1 Vision

Defence Futures, the strategic arm within the UK MOD, articulates the following vision:

“To be the leader in innovative, fair and trusted Defence Thinking.”

(UK MOD Defence Futures, 2018)

This vision extends beyond a conventional organisational statement. It reflects a deeper commitment to enhancing the conceptual contribution of defence as a core dimension of national power. That is, it embodies the belief that defence must not merely function as a tool of physical deterrence or military projection, but also serve as an intellectual and strategic foundation for national decision-making.

The realisation of this vision is operationalised through a multi-dimensional mission. Defence Futures seeks to generate strategic outputs that conceptually inform defence strategy, policy,

operations, doctrine, and education. According to Colonel Isacson (2024, Interview), through rigorous analysis of emerging threats, technologies, societal dynamics, and environmental factors shaping the character of future conflict, the organisation develops policy concepts, doctrines, and operational models designed to guide long-term strategic thinking. These outputs constitute the intellectual infrastructure for both defence capability development and national security deliberations.

Crucially, the mindset championed by Defence Futures transcends simple forecasting and moves towards a paradigm of strategic shaping. This involves not merely responding to anticipated futures but actively constructing preferred futures through informed intervention. A central consideration within this philosophy is the management of discontinuities within complex systems. As Colonel Joacim Isacson aptly remarks:

“We are always asking what we need to do today to shape the future into the direction we want it to go.” (Colonel Isacson, 2024, Interview)

This approach acknowledges that defence policy must navigate a landscape defined not by linear trends, but by the interaction of competing and complementary forces—competition and cooperation, solidarity and conflict, technology and ethics, autonomy and control. For instance, determining whether the future international order will evolve around cooperation or competition directly influences strategic choices in force posture, alliance architecture, and partnership strategies.

Accordingly, the vision of Defence Futures is not a fixed ideal, but rather a dynamic conceptual framework embedded with the capacity to adapt and evolve. This vision is made tangible through initiatives such as the Global Strategic Trends programme, which serves not merely as a foresight publication but as a collective intellectual foundation shaping how the MOD defines, designs, and acts upon the future.

9.1.1.2 Institutional Architecture and Strategic Functions

Defence Futures operates as a strategic foresight unit structured around five functionally specialised teams. Rather than representing a simple division of labour, this structure is designed to enable an integrated approach to the entire life cycle of future-oriented defence strategy—spanning conceptualisation, analysis, doctrinal development, legal review, and

delivery. Each team functions as a strategic enabler, with core responsibilities centred on threat-informed strategic analysis, conceptual design, and the development of actionable outputs to support decision-makers within the MOD, allied forces, and the wider strategic community.

a. Personnel Composition (as of September 2024)

As of September 2024, Defence Futures is composed of 78 permanent staff members, including 36 military personnel, 31 civilian experts, and 11 internationally seconded staff. The latter are drawn from seven countries—Sweden, Australia, Brazil, Germany, Finland, France, and the Netherlands—reflecting the unit’s identity as a multinational strategic community. This composition reinforces Defence Futures’ position as an outward-facing, alliance-integrated organisation capable of contributing to global security dialogues.

Category	Number of Personnel	Remarks
Military Personnel	36	Provides strategic analysis, doctrine, and operational support to each team
Civilian Experts	31	Offers specialised support in research, legal affairs, and policy communication
International Assignees	11	Multinational partners from Sweden, Australia, Germany, etc

[Table 10] Personnel Composition of Defence Futures (DCDC, 2024)

b. Specialist Functional Teams and Strategic Roles

1) Futures Team

This team provides the long-range contextual foundation for defence strategy, examining potential futures over a 20–30 year horizon. It identifies structural trajectories and discontinuities within the global security environment and informs capability development, military policy, and broader strategic planning. Its work culminates in publications such as the Global Strategic Trends series, which is often embedded within government-level strategic review processes.

2) Concepts Team

The Concepts Team formulates strategic concepts that inform force design and policy development. It synthesises insights from threat assessments—including terrorism, grey-zone conflict, and emerging technologies—to generate exploratory scenarios and propose innovative ways of operating in future operational environments. The team engages with academia, industry, governmental bodies, and allied stakeholders, thereby extending beyond current policy constraints to identify future operating concepts.

3) Doctrine Team

Responsible for developing and maintaining authoritative doctrine at the strategic and operational levels, this team provides the doctrinal foundation for training, operational execution, and policy implementation. It plays a critical role in ensuring coherence in joint and coalition operations and bridges the gap between professional military education (PME) and real-world practice. Doctrinal outputs also underpin interoperability in multinational defence cooperation and support the UK's defence diplomacy efforts.

4) Legal Team

The Legal Team ensures the legal legitimacy of defence strategies and activities. It reviews new weapon systems, modes of warfare, and cyber operations through the lens of international humanitarian law, arms control agreements, and UK domestic legislation. This team ensures that all outputs of Defence Futures meet legal and ethical standards, reinforcing legal-informed strategy as a core element of modern security planning and international credibility.

5) Support Team

This team enables the effective communication, dissemination, and operationalisation of the outputs generated by the other four teams. It manages analysis systems, publication strategies, stakeholder communications, and digital platforms. Its work enhances the visibility and impact of strategic outputs, ensuring that foresight products become high-value policy deliverables rather than remaining technical artefacts.

While Defence Futures does not possess formal policymaking authority, it functions as an evidence-based strategic advisor, shaping national security and defence planning through the provision of analytical insight. It occupies a unique position as a non-decision-making strategic actor, facilitating policy judgement rather than executing it directly—yet exerting influence through its authoritative and anticipatory contributions to defence thinking.

9.1.1.3 Philosophy and Practice of Strategic Foresight

The strategic foresight approach of Defence Futures is grounded not merely in predictive analysis, but in a philosophy of active futures shaping. This orientation rejects a passive reception of the future and instead operates on the premise that today's strategic decisions and thinking can construct the trajectory of tomorrow. As Colonel Joacim Isacsson aptly observes:

“We always consider what we must do today to influence the future to develop in the direction we desire... Global Strategic Trends is not merely a long-term predictive report but a component of an integrated security review exploring how to shape the future for the security of the British people” (MOD, 2024; Colonel Isacsson, 2024, Interview).

This perspective clarifies that strategic foresight is not limited to enumerating future scenarios or issuing warnings about potential threats. Instead, Defence Futures meticulously analyses the conditions and directions of policy instruments capable of orchestrating or influencing specific future outcomes within an increasingly uncertain and complex global environment. This analytical process is underpinned by three core concepts:

- Drivers of Competition and Cooperation

This involves examining the factors that determine whether key variables shaping international relations and security orders—such as economics, technology, climate, culture, and democracy—will culminate in competition (coercive posture) or converge towards cooperation (cooperative security). Through this analysis, Defence Futures provides long-term guidance for setting directions in foreign policy and security strategy (MOD, 2024).

- Exploration of Discontinuities

Beyond linear changes, this entails identifying and analysing unforeseen inflection points—such as radical technological advancements, institutional collapses, global pandemics, and social movements. Recognising that the strategic environment may undergo abrupt reconfigurations rather than continuous evolution necessitates the application of systemic thinking (MOD, 2024).

- Structural Exploration of Complex Interactions

Moving beyond single-factor analyses, this approach seeks to understand the dynamical complexity arising from the interplay of multiple variables that may offset or amplify each other. Through such analyses, Defence Futures aims to present not just 'possible futures' but 'shapable futures' (MOD, 2024).

This strategic philosophy is not confined to abstract theory or a singular report. It is institutionalised through the GST Programme, a long-running initiative of the MOD that is periodically updated. The most recent edition—GST 7: Out to 2055 (7th edition; hereafter GST 7)—was published in September 2024.

GST 7 identifies six overarching global drivers—geopolitical shifts, technological change, environmental transformation, socio-cultural dynamics, economic systems, and global governance—and examines 22 sub-trends through both qualitative and quantitative lenses. The report also presents five fictionalised future scenarios, constructed to capture the non-linear trajectories and path dependencies likely to define the coming decades.

These scenarios enable policymakers to move beyond deterministic conceptions of the future and instead engage with a pluralistic and conditional framework of strategic possibilities. They provide a foundation not only for risk avoidance but also for opportunity anticipation.

Ultimately, the foresight approach adopted by Defence Futures transcends forecasting. It encompasses design, steering, and adaptation—positioning the MOD not as a reactive entity but as a strategic actor capable of orchestrating and shaping the future through informed, evidence-based judgement.

9.1.2 Core Output of Strategic Foresight: Global Strategic Trends

9.1.2.1 The History of Global Strategic Trends

The GST programme, a flagship foresight initiative led by the UK MOD, has, since its inception in 2003, evolved into an enduring institutional cornerstone. Spanning over two decades and seven successive editions, GST has provided a vital long-range analytical framework that informs the formulation of national defence strategy and anticipatory security

planning. Far surpassing the remit of conventional forecasting exercises, each iteration of GST has served as an evidentiary foundation for reimagining the UK's strategic posture and defence capabilities within an increasingly complex and fluid global environment, while also offering intellectual traction to both governmental and allied partners (MOD, 2024).

1. Institutional Origins and Foundational Phase (1998–2003)

The genesis of the GST programme can be traced to the Strategic Defence Review (SDR) of 1998. This landmark document, published in the aftermath of the Cold War, identified the necessity for a defence architecture attuned to long-term global shifts and explicitly advocated for the establishment of a dedicated foresight function within the MOD (MOD, 1998). Subsequent doctrinal contributions, notably the Future Strategic Context for Defence (2001) and a series of White Papers, further consolidated this ambition. These developments culminated in the formal publication of the inaugural GST report in 2003, which marked the institutionalisation of strategic foresight within the UK defence apparatus (MOD, 2003).

2. Trajectory of Publications and Methodological Innovation

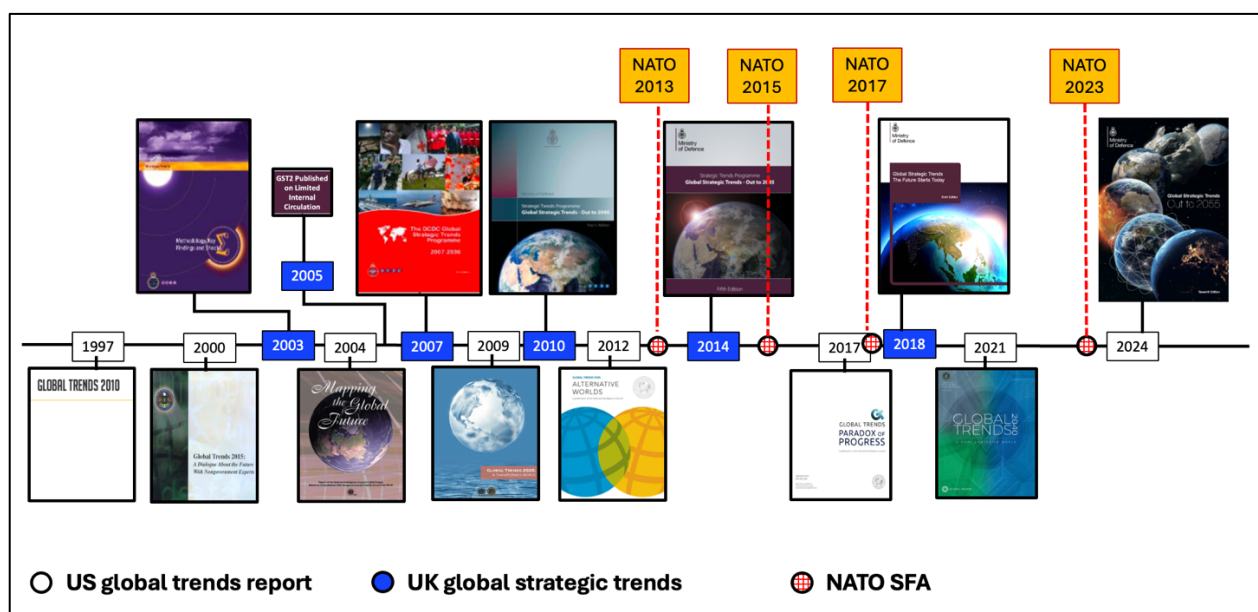
Since its first edition, GST has informed a wide range of high-level national strategy documents, including the National Security Strategy, the Strategic Defence and Security Review (SDSR), the Integrated Review, and the National Risk Assessment (Cabinet Office, 2015; HM Government, 2021). Each successive edition has exhibited methodological refinement and thematic expansion. The fifth edition (2014) signalled a heightened convergence with the SDSR and Integrated Review processes, while the sixth edition (2018) pioneered the incorporation of quantified scenario modelling and ripple effect analysis. The seventh and most recent edition, GST: Out to 2055, published in September 2024, adopts a complexity-based modelling framework, employs simulation of emergent technological trends, and engages in multi-layered governance analysis. Notably, it contributed substantively to the Integrated Review Refresh of 2023, thus reinforcing its centrality to contemporary defence and security policymaking (MOD, 2024).

3. International Benchmarking and Comparative Foresight Landscapes

Although GST is firmly rooted in the UK's sovereign defence planning framework, its intellectual development and strategic orientation have proceeded in parallel with analogous

initiatives by the US and NATO. The GT series of the US NIC, first issued in 1997, is typified by its threat-centric analytical posture and intelligence-driven methodology (NIC, 2021). In contrast, NATO's Strategic Foresight Analysis (SFA), launched in 2013, seeks to cultivate shared strategic awareness among Alliance members, and maintains a documented cross-referential relationship with GST (NATO, 2021).

In this context, GST occupies a dual strategic niche: as one of the most enduring and systematised national foresight frameworks globally, and as a platform that enhances transatlantic interoperability in strategic thinking. The 2024 edition epitomises this duality, having been shaped by contributions from over 10,000 global experts, collaboration with institutions across 40 countries, and intellectual support from 47 academic research centres. As such, GST has progressively evolved from a nationally situated defence planning instrument into a truly collaborative, internationally networked foresight mechanism (MOD, 2024).



[Figure 18] Chronology of the UK GST, the US GT and NATO SFA. by Author

Year	Edition	Title / Remarks
2003	1st GST	<i>Global Strategic Trends – First Edition</i>
2005	2nd GST	<i>Limited Internal Circulation</i> (Unofficial distribution)
2007	3rd GST	<i>Mapping the Global Future</i>
2010	4th GST	<i>Out to 2040</i>
2014	5th GST	<i>Out to 2045</i> – Commencement of formal policy integration
2018	6th GST	<i>The Future Starts Today</i> – Advancement of scenario-based analysis
2024	7th GST	<i>Out to 2055</i> – Establishment of a systems-based approach, unprecedented international collaboration

[Table 11] Overview of GST Editions and Key Developments (2003–2024). by Author

9.1.2.2 Core Missions of the Global Strategic Trends

The GST series operates as the UK MOD’s principal foresight endeavour, providing a long-range strategic context not only for national defence policy but also for cross-governmental coordination and allied cooperation. Far beyond a conventional forecasting tool, GST functions as an analytical and conceptual infrastructure that undergirds strategic adaptability, anticipatory planning, and epistemic preparedness within the evolving global security landscape (MOD, 2022).

Grounded in the epistemological premise that “the future cannot be predicted,” GST deliberately avoids singular forecasts or probability-weighted predictions. Instead, it embraces multiplicity and contingency by analysing an array of plausible trajectories and system-level transformations under divergent geopolitical, environmental, technological, and societal conditions. To this end, it employs a sophisticated suite of foresight methodologies—ranging from scenario planning, uncertainty matrices, and causal loop analysis to AI-enabled literature mining and expert elicitation workshops (MOD, 2022; MOD, 2023).

The mission of the GST is articulated through four key questions (MOD, 2023):

- How and why may the world change?

By exploring mechanisms and causes of change, GST identifies potential fundamental restructurings of the strategic environment. This involves analysing interactions among various subsystems such as geopolitics, technology, climate, social structures, and global governance.

- What are the key uncertainties?

GST avoids deterministic predictions by highlighting areas with high concentrations of uncertainty, thereby minimising strategic blind spots. This approach facilitates the early identification of indicators that may signal policy failures or opportunities.

- What does this mean for global security?

GST analyses the implications of identified trends and drivers on the global security order, considering variables such as the balance between cooperation and competition, allied force interoperability, and the rise of non-state actors.

- What does this mean for the UK?

Finally, GST examines how these analyses impact the UK's national security strategy and defence capability design within a structured framework, ensuring a clear feedback loop from global analysis to national strategy.

This multi-tiered and methodologically integrated approach positions GST not merely as an internal analytical tool, but as a foundational strategic resource. Its outputs underpin a range of critical UK government documents, including the Integrated Review, National Risk Register, National Security Strategy, and the Defence Command Paper. GST provides the epistemic scaffolding upon which these frameworks are constructed, continually revised, and operationalised.

Its institutional relevance was particularly evident in the Integrated Review Refresh 2023, wherein interim findings from the seventh edition of GST (Out to 2055) were not only referenced but substantively embedded into the review's analytical core—thus affirming GST's role as a strategic enabler within the UK's policy-making architecture (Cabinet Office, 2023; MOD, 2023).

More broadly, GST is emblematic of the MOD's evolving strategic philosophy: a future orientation rooted not in fatalism or linear progression, but in proactive engagement with volatility, complexity, and ambiguity. Within this paradigm, the future is conceptualised as a constructed domain—shaped by today's institutional choices, perceptions, and imaginative capacity. GST thereby serves as a strategic compass—an adaptive, intelligence-rich decision support system that equips policymakers and defence planners to act with greater foresight, resilience, and legitimacy in the face of geopolitical flux (MOD, 2022).

9.1.2.3 Core Mechanisms of the Global Strategic Trends

The GST programme embodies a sophisticated and methodologically integrated foresight infrastructure, anchored in a systems-based analytical architecture that accommodates the multifaceted uncertainties and complexities of the strategic future. Its methodological design rests on three interlocking pillars: (a) a connectivity-oriented analytical framework, (b) expert-driven mixed-method research execution, and (c) multi-dimensional structuring of foresight outputs.

a. Analytical Framework: A Systems-Oriented, Connectivity-Based Perspective

GST's analytical paradigm, as most recently refined in its seventh edition, departs decisively from linear extrapolative approaches. Instead, it is grounded in systems thinking and complexity theory, wherein strategic change is viewed as an emergent property of interconnected subsystems characterised by feedback loops, non-linearity, and dynamic interactions (Sterman, 2000; Helbing, 2013). Rather than focusing on isolated variables, GST examines the connectivity and mutual reinforcement between societal, economic, and environmental domains.

1. The Three Core Subsystems

In the case of GST 7, analysis is structured around three core subsystems that serve as foundational constructs shaping the global strategic environment:

Society – This subsystem encompasses demographic transitions, migration flows, urbanisation, identity fragmentation, and social cohesion. These variables are examined in light of their

implications for political stability and the integrity of democratic institutions (Inglehart & Norris, 2016).

Economy – Focus areas include industrial transformation, digitalisation, labour market shifts, and energy transition. GST pays particular attention to the geostrategic implications of decarbonisation and technological capital concentration (Perez, 2010; Schwab, 2016).

Environment – Climate stress, resource scarcity, biodiversity decline, and the degradation of planetary boundaries are analysed not only as environmental risks but also as triggers of geopolitical tension and societal fragility (Rockström et al., 2009; IPCC, 2023).

These subsystems are dynamically linked through three cross-cutting domains: Information & Technology, Conflict & Security, and Governance & Global Order. The metaphor of 'ring roads' is used to depict the circulatory nature of interactions—suggesting that transformation diffuses non-linearly through reciprocal loops and tipping points (Meadows, 2008).

2. Structured Analysis of Six Global Drivers of Change and Their Underlying Trends

Through this analytical framework, the GST initiative identifies six key global drivers of change, each marking a critical axis along which significant transformations are expected across global systems. These drivers reflect ongoing shifts in the international order and act as indicators of future volatility and structural change across political, economic, technological, and environmental spheres. Each is linked to specific systemic transitions—such as governance, institutional resilience, socio-economic adaptation, and geopolitical realignment—and their impacts are neither linear nor isolated. Instead, their dynamic interaction produces overlapping and often compounding effects, evolving through complex feedback loops that challenge traditional models of policy and strategic planning (MOD, 2022).

- Global Power Competition
- Demographic Pressures
- Climate Change and Environmental Stress
- Technological Advances and Connectivity
- Economic Transformation and Energy Transition
- Inequality and Pressure on Governance

This structure allows for the mapping of six overarching global drivers-(1) Power Competition, (2) Demographic Pressures, (3) Climate Change, (4) Technological Innovation, (5) Economic Transition, and (6) Governance-related Inequality-underpinned by 22 underlying trends. These are assessed using both regional analysis (across nine world regions) and evaluations of shared domains (including five cross-cutting spaces such as cyberspace, outer space, and the polar regions). The interplay of these dynamics is further structured through cross-impact analysis and causal loop analysis, which together provide a systemic understanding of interdependencies and feedback loops (MOD, 2022; Jackson, 2016).

3. Structuring through Cross-Analytical Techniques

The GST 7 applies two principal analytical methodologies to examine the interactions within complex structures:

- **Cross-Impact Analysis (CIA):** This technique structures the causal influences among various trends into an advanced network map. For instance, the enhancement of digital connectivity may simultaneously lead to increased technological dependence and pose dual challenges to democratic processes. Such multidimensional interconnections are visualised based on the intensity of overlapping influences (Influence Level) (Gordon, 1994; Chao, 2008).
- **Causal Loop Mapping (CLM):** This method identifies structurally recurring feedback mechanisms, particularly reinforcing and balancing loops, to establish a strategic early warning system for system volatility. For example, a loop comprising increasing inequality → societal discontent → political extremism → governance weakening → further inequality can be utilised to identify leverage points for policy intervention (Sterman, 2000).

This framework is integrated with regional analyses (across nine regions) and shared space analyses (five domains: cyber, space, polar regions, maritime, and public spheres), providing a complex strategic thinking system that reflects global–regional interplay.

b. Expert-Based Mixed Methodology

The analytical process of the GST programme is primarily conducted by the Futures Team within the Defence Futures organisation, under the UK MOD. Rather than being a conventional internal policy task, it represents a governance-based knowledge production model grounded in international expert collaboration. Small expert teams conduct parallel and cross-functional analyses for each thematic area (e.g., technology, climate, governance, security) and each of the nine global regions. This decentralised, modular structure supports the generation of system-level insights that reflect multiple perspectives. Based on the GST 7 research methodology, a mixed-methods approach was adopted, combining the following tools and techniques:

- **Quantitative Analysis:** Regional and thematic datasets were used to perform time-series analysis, regression-based estimations, statistical extrapolation, and correlation analysis. Official statistical abstracts served as key parameters—covering economic growth, technology diffusion, demographic change, and energy consumption.
- **Qualitative Assessment:** Expert workshops, scenario building, and literature-based causal mapping identified key structural drivers and decision sensitivities. For high-uncertainty topics (e.g., tech ethics, international law, civil society), divergent scenarios were developed with social acceptability in mind.
- **AI-Enhanced Analytical Methods:** Large language models (LLMs) and AI-based literature analysis were experimentally introduced. Tools such as GPT-type summarisation, keyword network analysis, and topic clustering were applied. Outputs underwent expert validation, proving especially valuable in areas like digital ethics, innovation, and transition economies (Healey, 2025).
- **Field-Based Qualitative Research:** Regional teams collaborated with local institutions through interviews, immersion studies, site visits, and conference participation. During the pandemic, virtual tools (Zoom, Webex, shared documents) enabled continued remote collaboration.

The results, shaped by the collective intelligence of a transnational epistemic network, reflect more than the perspective of a single nation or institution. Over 47 academic institutions, 40 countries, and 10,000 policy experts, scholars, and strategists contributed via workshops,

consultations, interviews, and white papers. Countries such as Australia, Brazil, Finland, Germany, and Sweden embedded personnel within the Futures Team for joint analysis. Collaboration also extended to international and multilateral bodies, including NATO, the EU, OECD, and the Geneva Centre for Security Policy (GCSP).

This multilayered structure fosters more than simple data exchange. It ensures a plurality of perspectives and enables transnational validation of strategic scenarios. The diversity of cultural, institutional, and security backgrounds enhances contextual relevance in interpreting change drivers and formulating responses. Ultimately, the GST programme's methodology exemplifies an expert-driven, mixed-strategy collaboration that integrates technical tools, specialised expertise, and field-based insight—positioning futures studies as a tool for practical policy design and governance, far beyond mere prediction.

9.1.3 The Case of Global Strategic Trends 7th Edition

A. Overview

The GST 7 represents a flagship strategic foresight report published under the auspices of the UK MOD, designed to inform long-term national security planning amid growing complexity and uncertainty in the global environment. The report was jointly led by the Defence Futures with a temporal horizon extending to the year 2055. Its aim is to systematically examine structural transformations in the international order and security environment from a multifaceted perspective.

In contrast to ad hoc forecasting, GST 7 adopts a structured, scenario-based approach to comprehensively evaluate the principal challenges and opportunities the world is likely to confront. The report identifies six key global drivers of change—including technological innovation, geopolitical reordering, resource competition, environmental crisis, and socio-cultural shifts—alongside 22 subordinate trends. This framework is intended to facilitate a coherent interpretation of the composite architecture underpinning future change (MOD, 2022). Notably, the analysis extends beyond linear trend description to illuminate how these factors interact and generate nonlinear complexity. For instance, the strategic imbalance induced by technological advances may amplify social instability, thereby creating novel security risks that elude traditional strategic frameworks. GST 7 thus functions as a foundation for strategic

integrative thinking, incorporating the interconnectivity and temporal dynamism of change vectors.

As a result, GST 7 not only reveals the information base and cognitive schema employed by the MOD to shape future strategic environments proactively, but also enhances the pre-emptive preparedness of policymakers, military strategists, and planning authorities. Its implications extend well beyond internal UK MOD planning to inform allied strategic coordination, global security governance, and military innovation (MOD, 2022; UK Parliament Defence Committee, 2023).

B. Core Process

The composition of GST 7 reflects an advanced futures-oriented framework tailored to strategic thinking and policy development within an increasingly complex and uncertain global security context. Distinctively, the report incorporates a fusion of methodologies-ranging from systemic interaction analysis and multi-scenario construction to policy simulation through expert engagement. Rather than aiming to forecast the future in a deterministic manner, the approach centres on exploring strategic options at the intersection of uncertainty and change.

1. Identification of Global Drivers of Change

The process begins with the identification of key global drivers of change, capable of exerting long-term and structural influence on global order. Based on expert consultation, longitudinal data analysis, and futures scholarship, GST 7 identifies the following six mega-drivers:

- Global Power Competition
- Demographic Pressure
- Climate Change and Pressure on the Environment
- Technological Advances and Connectivity
- Economic Transformation and Energy Transition
- Inequality and Pressure on Governance

These drivers are conceptualised not as isolated elements, but as components of an interacting complex system. The report visually maps their interdependencies, supporting the development of scenario narratives and strategic pathways (MOD, 2022). For instance, technological

advancement may boost productivity and automation, while simultaneously restructuring employment patterns and exacerbating societal inequities, thereby placing new strains on governance resilience. This interlinkage underscores the necessity of systemic thinking in risk assessment and strategic planning (Schoemaker, 2020; Curry and Hodgson, 2008).

2. System Analysis and Cross-Impact Mapping

The Global Strategic Trends 7th Edition (GST 7) represents a decisive shift away from conventional, deterministic models of linear forecasting. Instead, it embraces a sophisticated structural methodology designed to capture and articulate the intricate, non-linear interactions among a wide array of global drivers. This departure from a unidimensional future outlook reflects a recognition of the increasing complexity and interdependence of strategic variables that shape the evolving international landscape.

At the heart of this approach lies the Global Strategic Trends System (refer to Image 2), which provides a comprehensive visual framework by categorising the global system into three overarching meta-clusters, each representing a foundational pillar of contemporary global dynamics:

- The Environmental Cluster, which encompasses critical domains such as climate systems, ecological networks, natural resource availability, common or shared global spaces (such as oceans and polar regions), and the growing challenges of waste and pollution management;
- The Economic Cluster, comprising interlinked dimensions such as global markets, labour and capital flows, international trade regimes, and the structure and stability of financial systems;
- The Societal Cluster, which includes human-centric aspects such as public health infrastructures, cultural identities and societal values, demographic shifts and distributions, patterns of human settlement and urbanisation, and the configurations of authority and influence within communities and states.

These clusters are symbolically rendered as a system of interlocking gears, an imagery that powerfully conveys the inherently cyclic and dynamically interdependent nature of global systems. The movement of each gear affects and is affected by the others, representing a continuous series of feedback loops that either reinforce or mitigate systemic pressures. This design foregrounds the complex interplay between the core domain of Conflict and Security- which sits at the centre of the diagram-and the surrounding layer of Uncertainties, which encapsulate exogenous shocks and emergent disruptions. The model thus encapsulates how change drivers do not operate in isolation but rather interact in recursive and compounding ways, producing cascading effects across multiple sectors and scales.

This visualisation resonates strongly with foundational principles of strategic foresight and complexity theory. In particular, it reflects the conceptual insights of Rittel and Webber (1973), who famously argued that contemporary policy challenges-so-called 'wicked problems'-are characterised by their resistance to definitive formulation and linear resolution. Such problems necessitate systemic approaches that transcend siloed thinking, incorporating dynamic modelling tools capable of accommodating ambiguity, feedback, and nonlinearity in decision-making environments.

3. Scenario Planning

The Global Strategic Trends 7th Edition adopts scenario planning as a central analytical tool to address the long-term uncertainties and complexities shaping the future strategic environment.

The theoretical foundation of this scenario architecture lies in two axes of strategic uncertainty: (1) centralised state power versus decentralised authority, and (2) cooperation versus confrontation in international relations. These axes yield four archetypal futures:

- **Multilateralism:** This scenario assumes the persistence of state-centric power alongside robust international cooperation. It envisages a future in which state-led governance bolsters the efficacy of global institutions and fosters an expansion of rule-based orders, particularly in the domains of law, human rights, and climate agreements. Such a vision aligns with frameworks of global constitutionalism (Held, 2004).

- **Multipolarity:** Here, power is dispersed among multiple regional hegemonies, with cooperation persisting under strategic interdependence and competitive balancing. This scenario anticipates the localisation of norms across economic, technological, and security regimes, reflecting a fragmented yet pluralistic global order (Kupchan, 2012).
- **Network of Actors:** Marked by radical decentralisation, this scenario foresees a decline in state authority and the ascendance of non-state actors—such as multinational corporations, urban networks, transnational NGOs, and digital platforms. It illustrates a post-Westphalian model of governance where global influence is mediated through technocratic, civic, and corporate actors (Slaughter, 2004).
- **Fragmentation:** In this unstable future, strong centralised states coexist with the erosion of cooperative frameworks. The collapse or paralysis of multilateral institutions gives rise to renewed armed conflict, regional inequality, and intensifying humanitarian crises. This scenario is particularly suited to analysing hybrid security challenges, including climate-induced migration, cyber warfare, and geopolitical competition over critical resources (Bremmer, 2012).

These scenarios are not static forecasts but dynamic policy laboratories. They serve as tools for testing the systemic consequences of strategic decisions across sectors such as defence, technology, energy, and governance. Crucially, they facilitate exploration of second- and third-order impacts, enabling resilience planning in critical domains like climate security, digital sovereignty, and global supply chain stability. By offering structured yet flexible templates, GST 7 equips policymakers to navigate uncertainty with informed adaptability.

4. Exploring Pathways of Change and Identifying Inflection Points

The GST 7 moves beyond static scenario narratives by employing a dynamic, time-series-based pathway mapping methodology. Spanning the period from 2025 to 2055, this approach systematically charts future events, crises, trends, and opportunities to identify key moments for strategic decision-making and policy intervention.

Crucially, these pathways are not treated as linear developments but as branching trajectories shaped by conditional variables such as technological innovation, international cooperation, and resource contention. Identical origins may diverge markedly through non-linear

disruptions—such as abrupt technological acceleration or institutional collapse—triggered at specific inflection points. The report highlights these inflection and acceleration points within each scenario, providing critical markers for aligning the timing of interventions and calibrating responses to evolving risks. For example, in technology-centric pathways, the integration of AI-based military strategies is projected between 2035 and 2040—a period anticipated to prompt major shifts in deterrence paradigms, military command structures, and human-machine decision dynamics (MOD, 2024).

This approach moves beyond the cataloguing of hypothetical futures by identifying when to act, where to prioritise resources, and how to adapt institutions. It reflects the ethos of anticipatory governance (Fuerth, 2009; Fuerth & Ronis, 2020), enabling policymakers to prepare for and shape transition points rather than merely react to them. Furthermore, the report conducts cross-path analyses to examine convergence or divergence among scenarios across social, technological, and environmental domains. This enables an assessment of whether certain policy measures retain robustness across multiple trajectories.

In conclusion, the pathway analysis in GST 7 functions not merely as a descriptive account of potential futures but as a time-based strategic framework. By structurally delineating the speed, direction, and conditions of change, it enables strategists to proactively interpret and respond to the complexities and uncertainties of the future. This integrative approach to pathway exploration serves as a pivotal mechanism in transitioning from traditional predictive defence planning to a more flexible, scenario-based strategic system.

5. Expert-Informed Strategic Experimentation and Multidisciplinary Collaboration

The GST 7 distinguishes itself by embedding expert-informed participatory foresight methodologies to navigate the complexity and uncertainty of the future strategic environment. Rather than adhering to a traditional linear reporting model, GST 7 fosters a strategic experimentation ecosystem—integrating multidisciplinary insight, real-time policy feedback, comparative scenario analysis, and behavioural simulation across all stages of strategic planning.

Coordinated by Defence Futures, the initiative engaged a diverse array of actors: military strategists, academic futurists, civilian simulation specialists, industry leaders, and policy

design practitioners. These contributors collaborated through a continuous co-creative process, shaping the report's analytical architecture, scenario construction, and strategic pathways.

This collaborative structure was operationalised through the following key mechanisms:

- **Strategic Workshops:** Facilitated the establishment of a common lexicon among experts from diverse fields to interpret environmental changes, define scenario parameters, and assess risk factors collaboratively.
- **Strategic Dialogue Series:** Enabled defence and non-defence stakeholders to engage in thematic discussions on timely issues such as technological security, demographic shifts, and climate crises, thereby accumulating agenda-based insights.
- **Wargaming:** Simulated nonlinear crisis scenarios to evaluate the effectiveness of strategic options in real-time, testing flexibility and response capabilities at both operational and policy levels.
- **Scenario-Based Policy Simulations:** Conducted experiments across multiple scenarios to quantitatively and qualitatively analyse the conditions under which policy alternatives prove effective, assessing the robustness of strategies and thresholds for policy transitions.

C. Principal Insights and Policy Implications

The experimental and participatory foresight methodology underpinning the GST 7 generates a series of substantive policy insights that extend beyond mere methodological novelty. These insights reflect the maturing integration of complexity-informed planning, systems thinking, and anticipatory governance into national security and defence strategy formation.

1. Strategic Robustness Validation

The incorporation of scenario-based simulations and war-gaming enables the ex-ante assessment of strategic durability under conditions of high volatility and systemic uncertainty. This anticipatory function is critical for the formulation of adaptive strategies—those capable of absorbing technological discontinuities, geopolitical disruptions, and societal perturbations without losing policy coherence or institutional legitimacy. GST 7 thus offers a testing ground for stress-resilient strategy design in an era of compounding shocks.

2. Scenario Transcendence and Policy Flexibility

By systematically comparing the efficacy of specific policy interventions across divergent futures, GST 7 facilitates scenario cross-validation—a process through which decision-makers can identify strategic options that retain relevance and operational viability across multiple pathways. This supports the development of modular and flexible policy instruments that remain robust despite epistemic uncertainty, thereby strengthening long-term institutional adaptability and decision-making agility.

3. Institutionalisation of Civilian Epistemologies

Perhaps most significantly, GST 7 marks a deliberate institutional shift towards the inclusion of civilian insight as a formal component of national foresight capacity. Recognising the limitations of insular military or governmental expertise in addressing transboundary and non-traditional security threats, the report embeds societal perspectives, qualitative assessments, and domain-specific civilian expertise into the policy design process. This multidimensional integration enhances the democratic legitimacy, normative comprehensiveness, and epistemological diversity of strategic planning efforts.

Taken together, these implications signify a paradigmatic evolution in the practice of strategic foresight within the UK MOD. By formalising mechanisms for experimentation, multidisciplinary, and epistemic inclusivity, GST 7 positions itself not only as a foresight report but as a strategic policy instrument—one that is simultaneously analytical, anticipatory, and operational in scope.

Furthermore, GST 7 transcends the conventional limitations of government-authored strategic publications, emerging instead as a sophisticated policy artefact that strategically mobilises the collective intelligence of society. Through the systematic integration of expert-informed experimentation and multidisciplinary collaboration, the report moves beyond illustrative or hypothetical scenarios to produce operationally viable tools for policy execution. These scenarios, grounded in analytical rigour and strategic foresight, are designed with direct applicability to real-world decision-making processes.

The methodological architecture articulated in GST 7 thus stands not only as a paradigm shift within the MOD, but also as a leading exemplar for other governmental departments and national institutions engaged in long-range strategic planning. By institutionalising anticipatory governance and enhancing strategic agility amidst global volatility, the GST 7

framework offers a replicable model that significantly contributes to the advancement of resilient, future-ready public policy design.

9.1.4 Implications of MOD Defence Futures for National Security and International Alliances

The GST 7, spearheaded by the Defence Futures division within the UK MOD, marks a pivotal shift from insular departmental planning towards an integrated, multi-institutional foresight initiative. The composition of participating and contributing organisations underscores a broader transformation in national security governance—one that increasingly reflects a networked and transdisciplinary strategic ecosystem both within and beyond national borders.

1. Institutionalisation of Cross-Governmental and Civilian Collaboration

As evidenced in the contributing agencies, over thirty governmental departments, public research institutions, academic bodies, industrial actors, and private think tanks across the UK participated in the development of GST 7. These include, inter alia, the MOD, HM Treasury, Department of Health, Department for Environment, Food and Rural Affairs (DEFRA), Met Office Hadley Centre, the former Department for Business, Innovation and Skills, BT Innovate, the Cabinet Office Horizon Scanning Team, and leading universities such as the London School of Economics and King's College London. This extensive collaboration reflects a strategic reconfiguration in which national security is no longer conceived solely in military terms, but rather as an integrated governance challenge spanning climate, health, technology, and welfare systems. Notably, the involvement of the Cabinet Office and its Horizon Scanning Group highlights an emergent whole-of-government approach to anticipatory crisis governance, affirming the growing imperative for institutional platforms capable of coordinating future-oriented policy across departmental boundaries.

2. International Strategic Alliances and Networked Cooperation

The GST 7 also evidences a growing architecture of international cooperation in strategic foresight. Contributing international entities include NATO's Allied Command Transformation, RAND Europe, the Royal United Services Institute, the International Energy Agency, and national defence institutions from Singapore, Brazil, Sweden, Saudi Arabia, the United Arab Emirates, and China's Academy of Military Science. This extensive international participation suggests that strategic planning within the MOD is increasingly informed by a

transnational framework of alignment and co-creation. The presence of actors across Asia, the Middle East, Europe, and the Americas indicates a deliberate effort to rearticulate the UK's defence posture through what may be termed an “extended national strategy”—a construct grounded in robust global partnerships.

Such a framework is already materialising in areas such as joint crisis response scenario development, multilateral standards for emerging technologies, collaborative military training regimes, and cross-border agreements addressing climate and energy security. These trends reflect a shift beyond conventional defence alliances towards a model of functional security cooperation, offering foundational insights for the design of post-NATO collaborative security architectures.

3. Strategic Legitimacy through Polycentric Governance

This trans-institutional structure also serves to insulate strategic planning from narrow political ideologies or partisan imperatives. Instead, GST 7 derives legitimacy from a consensus-based approach rooted in epistemic diversity and stakeholder inclusivity. Such an approach enhances policy credibility, societal acceptance, and institutional resilience across multiple strategic scenarios. Through this model, Defence Futures demonstrates how polycentric governance structures can bolster both the procedural legitimacy and practical robustness of long-range defence strategy.

The case of MOD Defence Futures ultimately illustrates that twenty-first-century strategic planning is no longer the sole preserve of singular institutions. Rather, it is the product of co-evolutionary interactions among domestic departments, international allies, and civil epistemic communities. As such, this approach offers a compelling reference point for national governments—including the Republic of Korea—seeking to balance strategic autonomy with collective resilience in an increasingly complex and interconnected global security environment.

9.1.5 Concluding Implications: A Three-Pillar Assessment: Mission, Evaluation, and Talent

This section draws upon the GST 7 to present three foundational pillars essential for institutionalising long-term strategic foresight capacity within the UK and other public sector institutions: (1) Mission Implementation & Support, (2) Evaluation, and (3) Talent

Development. This case study reveals that these pillars do not function as isolated variables, but rather as mutually reinforcing dimensions that collectively establish the structural basis for sustaining anticipatory governance amidst systemic uncertainty and strategic volatility.

1. Mission Implementation & Support: Towards a Operational Strategy

GST 7 underscores the imperative of transitioning from static, monolithic strategy documents towards dynamic, scenario-integrated strategic architectures. The implementation of such a model necessitates institutional mechanisms that support conditional planning, modular policy design, and iterative adaptation. Strategic planning must be embedded within an operational ecosystem that enables continuous refinement based on emerging risks, feedback from simulations, and multi-actor engagement. Moreover, mission implementation frameworks must increasingly account for the dual-use nature of technologies and the multi-domain characteristics of future operational theatres. This entails a recalibration of MOD's development and operational strategy to ensure seamless interoperability with civilian sectors, inter-ministerial agencies, and allied partners under variable conditions.

- **Multi-Stakeholder Collaboration:**

The planning process included not only internal military experts, but also regular engagement with think tanks, industry partners, academic institutions, and civil society. This arrangement ensured a continuous feedback loop, reinforcing the validity and practical utility of the strategic planning process (Rittel and Webber, 1973; van der Heijden, 2005).

- **Plurality and Divergence Integration:**

From the initial phases of design, potentially conflicting perspectives were deliberately collected and analysed in parallel. This structure enabled constructive conflict and the co-existence of layered rationalities, rather than privileging a singular dominant viewpoint. Such integration enhanced both the internal coherence and external legitimacy of the strategy (Schoemaker, 1995; Ramirez and Wilkinson, 2016).

- **Operationalisation of Strategic Intelligence:**

The analytical insights and scenarios generated through the report were structurally aligned with practical domains such as defence budgeting, weapons systems development, and manpower planning. This ensured that strategic documentation did not remain abstract but was effectively translated into actionable policy instruments (George and Bennett, 2005; MOD, 2018).

Such an operational architecture represents a deliberate prioritisation of the long-term sustainability, institutional resilience, and cross-domain policy coherence of strategic initiatives, as opposed to a narrower focus on the short-term efficiency or expediency of discrete decision-making cycles. By embedding mechanisms that facilitate adaptive planning and inter-agency alignment, it addresses the need for governance systems capable of navigating protracted, nonlinear challenges that transcend traditional bureaucratic boundaries. Furthermore, this model of distributed strategic governance demonstrates a scalable and transferable framework, potentially adaptable to other governmental departments beyond the MOD, thereby contributing to a whole-of-government approach in dealing with volatility, complexity, and uncertainty. In this context, the growing prominence of multi-actor, participatory models of strategic planning and execution marks not merely a procedural innovation, but a fundamental paradigmatic shift in contemporary policymaking practices under conditions of systemic uncertainty.

2. Institutionalising Multi-Scenario Monitoring and Strategic Feedback Mechanisms

The GST 7 highlights the need to move beyond linear, post-hoc performance assessments and instead embrace an anticipatory evaluation architecture grounded in scenario stress-testing, cross-scenario robustness validation, and real-time feedback loops. This requires the institutionalisation of continuous monitoring systems that can assess the adaptive efficacy of policy instruments across divergent pathways. Evaluation must evolve from a bureaucratic exercise into a core strategic function—integrated from the outset of strategy formulation to its operational execution. In doing so, evaluation becomes a mechanism not only for accountability but also for strategic learning, resilience optimisation, and pre-emptive recalibration in response to shifting geopolitical and technological contexts.

- **Integration into Defence Planning and Joint Strategic Operations:**
The report is designed to function as a scenario-based assessment tool within military strategic planning departments and the Joint Chiefs of Staff. Its applicability has been confirmed in simulation planning and operational scenario training. Scenario-based assessments are instrumental in evaluating military capabilities and informing strategic decisions .
- **Expansion through Civil-Military Collaborative Applications:**

Particularly concerning non-military security issues such as climate security, energy transition, and infrastructure resilience, the report lays the groundwork for developing and applying integrated risk analysis models through joint projects with civilian think tanks and research institutions. This aligns with the whole-of-government approach, which emphasizes cross-sectoral collaboration to address complex societal challenges .

- **Application as Educational and Training Material:**

The scenario design structure of GST 7, its diagrams illustrating interactions among trends, and its time-based pathway mappings are readily adaptable into curriculum content for defence university education, public policy courses, and strategic training workshops. These components are also suitable for conversion into educational simulation materials. Incorporating futures literacy into educational programs enhances individuals' capacity to anticipate and prepare for future challenges .

Moreover, GST 7 advances the role of evaluation from a peripheral monitoring activity to a strategic intelligence mechanism that continuously informs policy formulation and recalibration. By embedding multi-scenario stress-testing and feedback loops into institutional planning processes, it transforms evaluation into an anticipatory function that fosters strategic learning, system-level adaptability, and real-time responsiveness. In doing so, GST 7 not only strengthens strategic agility within the MOD but also provides a transferable model for embedding scenario-based evaluation across broader domains of public governance, including diplomacy, energy, and environmental security. The report thereby demonstrates how evaluation, when institutionalised as a foresight-driven architecture, can become a cornerstone of resilient and future-oriented policy ecosystems.

3. Talent Development: Building Foresight-Competent Human Capital

Strategic foresight cannot be institutionalised without sustained investment in human capital. GST 7 positions talent development not as a peripheral support function, but as a core structural pillar of future-ready governance. The cultivation of foresight-competent professionals demands a comprehensive strategy that spans education, intersectoral mobility, and international engagement. From embedding futures literacy in national education systems to facilitating talent flows across institutional and geopolitical boundaries, GST 7 outlines a multidimensional approach to building a resilient, strategically agile workforce. The following

three components illustrate this holistic agenda for institutionalising foresight capacity through human capital development.

- **Institutionalising Strategic Capacity-Building through Education and Training:**
GST 7 stresses the integration of foresight literacy into defence education, civil service training, and leadership development. Scenario design, systems mapping, and strategic simulation exercises are not merely pedagogical tools but mechanisms for cultivating cognitive adaptability. Futures-oriented training frameworks should be institutionalised as core curricular components within military academies, public administration schools, and policy leadership workshops. Through such capacity-building, foresight evolves from a niche skill to a structural competency essential for long-term policy innovation.
- **Promoting Intersectoral and Cross-Boundary Talent Mobility:**
To respond to transboundary threats—such as climate-induced displacement, cyber conflict, and competition over technological standards—strategic competence must transcend institutional silos. GST 7 therefore calls for the promotion of rotational fellowship programmes, long-term secondments, and cross-sectoral knowledge exchange across government, academia, industry, and civil society. This mobility not only enhances individual expertise but also builds an integrated intelligence ecosystem that supports adaptive policymaking under volatile, uncertain, complex, and ambiguous conditions.
- **Strategising Global Partnerships through Talent Diplomacy:**
In a world increasingly shaped by shared risks and distributed power, the development of globally competent strategic talent becomes a prerequisite for functional alliances. GST 7 encourages multinational scenario co-design, joint military–civilian training initiatives, and collaborative intelligence-sharing mechanisms as critical infrastructures for building collective resilience. These are not auxiliary diplomatic gestures, but strategic imperatives for cultivating foresight-aligned leadership capable of navigating complex global systems.

Ultimately, talent development is not an ancillary component but a structural prerequisite for the institutionalisation of strategic foresight. The talent strategy advanced by GST 7 transcends the cultivation of individual expertise, aiming instead to embed foresight competence across the organisational fabric of the public sector. It marks a shift from reactive policy response to proactive governance capable of navigating and shaping complex futures. In this regard, talent

development emerges as both a catalyst for future-oriented policy innovation and a foundational driver of long-term strategic resilience at the national level.

9.2 Urban Futures in the UK Government Office for Science

The UK's GO-Science has long played a central role in embedding strategic foresight within the architecture of national policymaking. Among its most prominent initiatives is the UK Foresight Programme, a multi-decade institutional endeavour aimed at harnessing scientific knowledge, interdisciplinary collaboration, and scenario-based analysis to inform long-term strategic governance. As urban challenges intensify amidst climate change, technological disruption, demographic transformation, and governance fragmentation, the role of foresight in shaping sustainable, resilient, and inclusive urban futures has become increasingly salient.

This section examines the application of foresight within the domain of urban policy, with a particular focus on the Future of Cities project—one of GO-Science's flagship foresight endeavours. It situates the project within the broader institutional and epistemic context of the UK National Foresight Programme and explores the structural mechanisms, leadership dynamics, and policy design processes that underpinned its execution.

The analysis is organised into five subsections. Section 9.2.1 outlines the strategic vision and objectives of the UK Foresight Programme as they pertain to urban futures. Section 9.2.2 examines the programme's governance structure and decision-making architecture. Section 9.2.3 highlights the pivotal leadership role played by the GCSA in shaping and legitimising the foresight process. Section 9.2.4 provides an in-depth case study of the Future of Cities project, including its methodology, stakeholder engagement strategies, and policy impacts. Finally, Section 9.2.5 synthesises key findings through a three-pillar framework—Mission, Evaluation, and Talent—thereby offering a set of transferable policy insights for institutionalising urban foresight across other governance contexts.

By interrogating the UK's institutional experience with foresight-driven urban policy, this chapter contributes to the broader discourse on how governments can future-proof their cities through anticipatory governance, cross-sectoral collaboration, and long-range strategic visioning.

9.2.1 The Institutionalisation of the Contemporary UK Foresight Programme

The National Foresight Programme, currently administered under the UK GO-Science, has undergone continuous evolution since the launch of its third-generation 'Foresight Programme' in 1993. The programme aims to integrate science-based long-term strategic planning with policy formulation. Its primary focus lies not in conventional technological forecasting but in institutionalising foresight governance through the exploration of uncertainty and layered possibilities within complex socio-technical and environmental systems.

“The programmes were initiated by me primarily because I was very concerned about climate change. I knew this was a long-term problem. But there was another reason as well. During my first period in office, we had a foot-and-mouth disease epidemic, and that crisis was critical to the way I worked with Tony Blair.” (Sir King, 2024, Interview)

The early 2000s marked a turning point for the UK as it confronted existential risks such as climate change, emerging infectious diseases, and systemic technological vulnerabilities. A pivotal moment came with the outbreak of FMD in 2001, which underscored the urgent need for strategic long-term planning. At the forefront of this response was Sir David King, the GCSA from 2000 to 2007. Drawing upon data from the 1966 outbreak, King emphasised the necessity of a systematic, science-based approach. His direct briefing to Prime Minister Tony Blair catalysed an unprecedented increase in science funding—reportedly fivefold—and expanded the role of scientists within Cabinet-level advisory functions. Blair's 2002 'Science Matters' speech publicly enshrined evidence-based policymaking as a national priority. These foundations directly contributed to the enactment of the 2008 Climate Change Act, under Gordon Brown's premiership, which committed the UK to an 80% reduction in carbon emissions by 2050.

“The first and second cycles were really just introductions to the Foresight Programme. When I joined the government, I realised that the programme had become — to use an English phrase — a bit of navel-gazing. It was very inward-looking, and it seemed to me that the only people who actually benefited from the Foresight Programme were the people in the Foresight Programme. So, I scrapped the whole thing and introduced what, as you mentioned, is still running today — what I called the In-depth Foresight Programme. When I launched the In-depth Foresight Programme, the first thing I had to do was increase the budget quite substantially. The programme had a team of experts who were hand-picked for it, along with a group of people in my office who were trained in the foresight process. That process itself was

adapted from the American foresight model developed by the RAND Corporation.” (Sir King, 2024, Interview)

To overcome the limitations of the first and second-generation foresight initiatives, Sir David King launched the third-generation Foresight Programme, drawing inspiration from the strategic planning mechanisms developed by the RAND Corporation in the US. Under his leadership, foresight was redefined from a predictive tool to a structured system for embedding scientific insight into anticipatory governance. The contemporary National Foresight Programme now operates as a multi-actor, evidence-driven platform that supports future-oriented policymaking across government.

In 2005, King further led the establishment of the Horizon Scanning Centre, tasked with systematically identifying long-range trends—including technological change, environmental risk, social dynamics, and geopolitical volatility—and communicating them to relevant government departments. The Centre institutionalised interdisciplinary collaboration among scientists, policymakers, and civil society actors. This marked one of the first formal instances in public administration wherein speculative imagination and scientific rigour were integrated to inform policy—effectively experimenting with foresight governance (Carney, 2024, Interview).

The impact of the foresight programme has been especially significant in addressing catastrophic and existential risks. Through sustained engagement with scientists, policymakers, and industry leaders, the programme has helped embed a culture of long-term thinking within UK governance. Its strategic utility has been demonstrably validated in both the 2001 outbreak and in contemporary responses to climate crisis. By integrating evidence-based science, cross-sectoral collaboration, and scenario planning, the programme has established a global benchmark for anticipatory government practices.

“We all had to read up on it, and we began afresh with this new Foresight Programme, in which we would look at particular challenges facing the UK in the future. We identified two kinds of challenges: first, what poses a major risk to the UK, and second, what represents a major opportunity. But the second part — and this was completely new — was that we were looking far into the future. Most governments tend to focus on this year, next year, or perhaps the year after that. Government departments are the same. So what we introduced was something entirely new to government: a perspective that looked fifty, sixty, even seventy years ahead — and sometimes beyond that.” (Sir King, 2024, Interview)

“The Foresight areas were really important — I was consulted on them, particularly on the early detection and identification of infectious diseases. For example, you’ll be aware that transport is a very important vector for carrying infectious diseases. That study was led by Dame Sally Davies, and I was involved in the steering committees, which sort of provided advice.” (Collins, 2024, Interview)

The vision of the UK’s Foresight Programme goes beyond merely predicting future events. It seeks to cultivate futures literacy across government, empowering policymakers to recognise and actively engage with uncertainty (GO-Science, 2021b). To this end, the programme articulates four primary objectives:

Firstly, advances in science and technology, coupled with socio-economic transformations, provide a critical foundation for setting strategic policy priorities. The programme emphasises the integration of empirical evidence and expert judgement across all stages of the policy cycle, from formulation through implementation to evaluation. To support this aim, the GO-Science coordinates a network of departmental scientific advisers and fosters interdisciplinary research partnerships, thereby enhancing both the legitimacy and effectiveness of public policy.

Secondly, contemporary policy challenges—such as pandemics, climate adaptation, and artificial intelligence ethics—are characterised by high levels of interdependence and complexity that preclude resolution by single agencies. In response, GO-Science is committed to institutionalising systems thinking and disseminating these capabilities across the public sector. This approach is designed to improve organisational agility, enhance policy adaptability, and build strategic resilience.

Thirdly, futures thinking is substantially enriched by the inclusion of diverse perspectives. The programme actively promotes deliberative engagement with a broad spectrum of stakeholders, including academia, civil society, youth, and marginalised communities. It embeds co-creation and inclusivity within foresight practices, thereby reinforcing the democratic legitimacy and innovative potential of policy design.

Fourthly, foresight must not be confined to isolated departments or ad hoc initiatives. Instead, it should become an integrated, systemic capability spanning all domains of government—including climate policy, defence, health, education, technology, and diplomacy. GO-Science advances this objective through the standardisation of horizon scanning methodologies, the

integration of strategic planning across departmental boundaries, and the establishment of inter-ministerial coordination mechanisms. These efforts aim to strengthen policy coherence and enhance the strategic agility required to navigate complex and uncertain futures.

Taken together, the UK's Foresight Programme aimed to present a structured and mature approach to anticipatory governance. By synthesising scientific evidence, strategic foresight, scenario methodologies, and integrated policy design, it moves beyond reactive crisis management. Instead, it lays a robust institutional foundation for long-term, resilient, and forward-looking governance in the face of deep uncertainty and systemic transformation.

“The programmes were initiated by me primarily because I was very concerned about climate change. I knew this was a long-term problem. But there was another reason as well. During my first period in office, we had a foot-and-mouth disease epidemic, and that crisis was critical to the way I worked with Tony Blair.” (Sir King, 2024, Interview)

“The first and second cycles were really just introductions to the Foresight Programme. When I joined the government, I realised that the programme had become — to use an English phrase — a bit of navel-gazing. It was very inward-looking, and it seemed to me that the only people who actually benefited from the Foresight Programme were the people in the Foresight Programme. So, I scrapped the whole thing and introduced what, as you mentioned, is still running today — what I called the In-depth Foresight Programme. When I launched the In-depth Foresight Programme, the first thing I had to do was increase the budget quite substantially. The programme had a team of experts who were hand-picked for it, along with a group of people in my office who were trained in the foresight process. That process itself was adapted from the American foresight model developed by the RAND Corporation.” (Sir King, 2024, Interview)

“We all had to read up on it, and we began afresh with this new Foresight Programme, in which we would look at particular challenges facing the UK in the future. We identified two kinds of challenges: first, what poses a major risk to the UK, and second, what represents a major opportunity. But the second part — and this was completely new — was that we were looking far into the future. Most governments tend to focus on this year, next year, or perhaps the year after that. Government departments are the same. So what we introduced was something entirely new to government: a perspective that looked fifty, sixty, even seventy years ahead — and sometimes beyond that.” (Sir King, 2024, Interview)

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9.2.2 The Structure and Decision-making Process

The current UK National Foresight Programme is situated within the GO-Science, which operates under the DSIT. Although information on the current foresight-related teams is not publicly available, interviews with incumbent foresight-relative civil servants who requested anonymity indicate that the programme is organised around three primary functional units: Foresight, Futures, and Emerging Technologies (EmTech), each of which contributes distinctively to the integration of long-term thinking within government policy processes.

The Foresight team serves as the conceptual and operational core of the programme. It undertakes long-term trend analysis and scenario development across critical policy domains such as climate change, urban sustainability, public health, and national security. Beyond managing project budgets and timelines, the team collaborates extensively with academia and think tanks to provide robust scientific evidence for policymaking. Its functions include the design of future-oriented scenarios, coordination of expert workshops, and the production of comprehensive foresight reports (Anon, 2024, Interview)..

The Futures team plays a pivotal role in institutionalising the foresight mindset across the civil service. It is responsible for the development of toolkits and training materials, including The Futures Toolkit (2024) and A Guide to Future Thinking (2021), designed to support policy practitioners in embedding long-term strategic thinking into everyday policy design. The team also maintains a trends database and facilitates participatory workshops to enhance futures literacy across central government (Anon, 2024, Interview).

The EmTech unit focuses on horizon scanning for rapidly evolving technologies, such as artificial intelligence, quantum computing, synthetic biology, and carbon-neutral technologies. It assesses the societal, economic, and policy implications of these technological shifts, providing early intelligence that informs anticipatory regulation and innovation-friendly policy design (Carney, 2024, Interview).

These three units function synergistically, collectively embedding foresight capability throughout the full policy lifecycle—from formulation to implementation and evaluation. This integrated model transcends traditional departmental silos and supports knowledge circulation and adaptive learning, aligning with a multilayered governance approach (GO-Science, 2022). The programme increasingly prioritises adaptive, rather than predictive, governance by bridging top-down strategy (e.g. Prime Minister’s Office-led projects) and bottom-up participation (e.g. regional citizen consultations).

A key component of this integrated foresight ecosystem is the regular CSA Meeting, convened weekly under the leadership of the GCSA. These meetings serve as a strategic platform where emerging policy challenges are discussed, and potential foresight project themes are identified and coordinated across departments. Although the GCSA is institutionally positioned within GO-Science rather than a direct arm of the Prime Minister’s Office, it is widely recognised that the GCSA maintains privileged access to the Prime Minister and provides direct briefings on critical foresight issues.

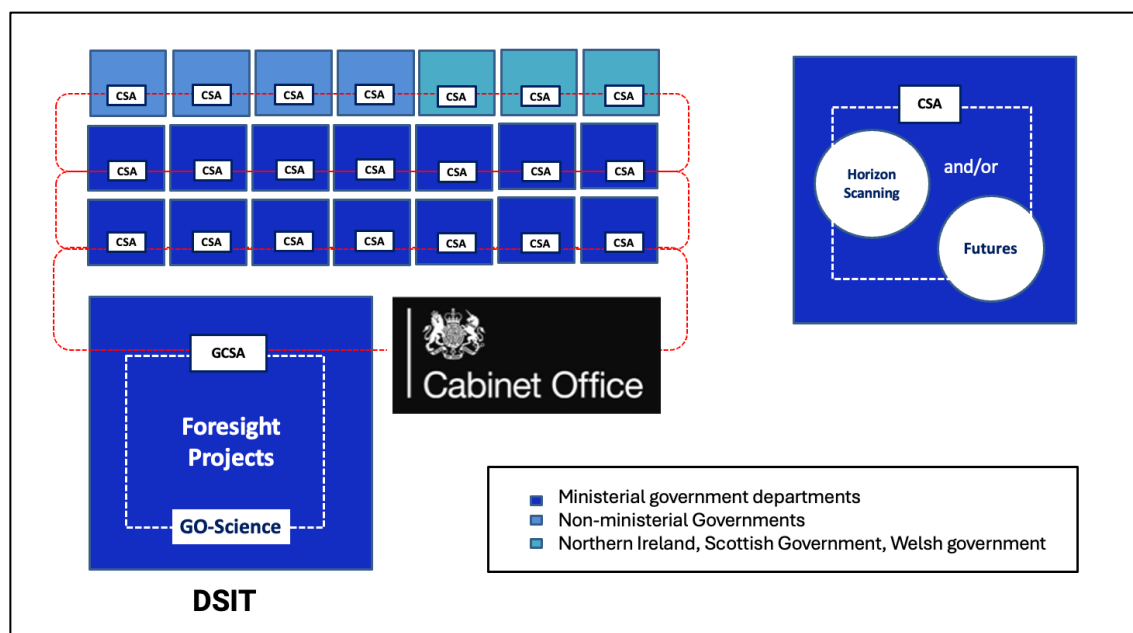
“This was a critically important part of developing the Foresight Programme. What I realised was that, as GCSA, I met the Prime Minister regularly. But in the Foresight Programme, I could see that the CSAs of each department were not directly engaging with the Prime Minister on policy matters. So I decided that there should always be at least one government minister serving as chair of the Foresight Programme.” (Sir King, 2024, Interview)

“We met every Wednesday morning for an hour and a half, around 7:45 if I remember correctly. (Collins, 2024, Interview)

The structural coherence of this system is further illustrated in a governance diagram (as of January 2024), which maps the integration of foresight functions across the UK government. This diagram, developed based on interviews with current civil servants, encompasses 14 ministerial departments, 3 non-ministerial government bodies, and 3 devolved administrations (Northern Ireland, the Scottish Government, and the Welsh Government). Within each of these institutions, foresight-related activities are led by a Chief Scientific Adviser (CSA), who oversees dedicated teams responsible for Horizon Scanning and Futures. These CSA-led units embed tailored foresight capacity within their respective policy domains, enabling science-based decision-making across government.

GO-Science and the Cabinet Office act as the strategic coordination hubs for this decentralised network. The GCSA, as the central node, ensures coherence and collaboration across departmental foresight activities and leads cross-government foresight initiatives. This institutional design reflects the UK government’s systemic commitment to constructing an integrated, collaborative foresight ecosystem that moves beyond reactive policy to embrace anticipatory, adaptive governance (King, 2024, Interview).

This multi-layered structure demonstrates that foresight functions must not remain isolated within any single department. Instead, they must be institutionalised across all phases of the policy cycle at the whole-of-government level. By facilitating strategic alignment through the CSA network and strengthening cross-departmental coherence, the UK has advanced a governance model oriented not merely towards prediction, but towards the cultivation of strategic agility and institutional resilience.



[Figure 19] The Structure of the UK National Foresight Projects. by Author.

9.2.3 GCSA's Leadership: The Role, Functions, and Impacts

9.2.3.1 The Role, Functions, and Impacts of GCSA

Although the UK's National Foresight Programme does not possess formal policy-making authority and is generally limited to an advisory function, the GCSA plays a pivotal role in transforming its consultative nature into a strategic lever, thereby exerting substantial influence over policy processes. The GCSA serves as both mediator and coordinator, integrating scientific evidence and long-term perspectives into governmental decision-making, and occupies an irreplaceable position within the architecture of strategic foresight in the UK government.

The role of the GCSA extends far beyond traditional scientific advising. It is a position of high-level leadership that connects scientific reasoning with national strategy. The GCSA provides independent scientific advice to the Prime Minister and Cabinet, while simultaneously chairing the National Foresight Programme under the GO-Science, which sits within the DSIT. Although structurally placed under GO-Science and not within the Prime Minister's Office, the GCSA regularly reports directly to the Prime Minister in one-to-one briefings, thereby retaining both strategic autonomy and institutional influence.

The institutional reconfiguration introduced during Sir David King's tenure as GCSA in 2002 marked a critical turning point, advancing a more evidence-based approach to policy-making through the foresight system. Since then, the GCSA has chaired major Foresight Projects, playing a central role in embedding strategic foresight capacity across Whitehall (GO-Science, 2020; UK Parliament, 2006; Fobé and Brans, 2023).

At present, all UK ministerial departments operate at least one Futures Team or Horizon Scanning Team. Additionally, each department is supported by a CSA, who serves as a 'positional broker' linking science and policy. The GCSA convenes weekly roundtable meetings with all CSAs, providing a strategic coordination platform where cross-departmental issues such as scenario development, technology assessment, and medium- to long-term challenge identification are addressed. This meeting structure ensures that foresight functions are not imposed top-down but are aligned with the distinctive policy contexts of each department.

“When Dave King was the GCSA, he chaired a meeting every Wednesday morning with all the CSAs from 20 or 30 government departments. So, 20 or 30 people sat around the table.” (Sir Wilson, 2024, Interview)

“I (Brian Collins) started join from the intelligence infrastructure system. I was involved in the initiation of that project and was on the Advisory Board for it. When I became CSA, I was responsible for making sure that people understood what it was about....” (Collins, 2024, Interview)

For instance, in responding to cross-governmental challenges such as the climate crisis, pandemic preparedness, or energy security, departmental CSAs are tasked with assembling expert groups (Collins, 2024, Interview; Penn, 2024, Interview). Under the GCSA’s leadership, these groups co-develop integrated strategies, thereby enabling a form of horizontal governance that transcends siloed responses (GO-Science, 2020). This cooperative, multi-departmental foresight ecosystem allows the UK to manage complex issues through systematic and anticipatory responses.

Beyond intra-governmental coordination, the GCSA also acts as a key mediator between the scientific community, government, and civil society. This role proved particularly vital during the COVID-19 pandemic, where the GCSA played a leading part in articulating the scientific rationale behind policy choices and maintaining public trust (Michie et al., 2022; King, 2020). Such engagement is not merely communicative but serves a strategic function in legitimising policy through evidence-based reasoning and inclusive discourse.

“At the time, I was serving as Executive Director of the UK’s foresight programme on the international stage, regularly participating in meetings of senior science advisers to the G8, where climate change and pandemics were major items on the agenda.” (Sir King, 2024, Interview)

Furthermore, the GCSA contributes to policy formulation through various channels, including the publication of foresight project reports, technical briefings, and strategic recommendations to the Cabinet. These activities reinforce a shift away from reactive, prediction-based policy models towards long-term strategies rooted in structural adaptability.

“I would imagine that high ranking officials are all aware all of the existence of foresight. I think it’s quite clear that we didn’t — and still don’t — have the same ability to bring together academic experts to work on these policy issues.” (Penn, 2024, Interview)

The GCSA and CSA networks have established collective foresight networks encompassing academia, industry, think tanks, and civil society organisations considered pertinent to the operation of individual foresight projects. Through this inclusive and networked approach, the UK government has begun to institutionalise a flexible, intelligence-driven policy infrastructure that extends beyond traditional planning mechanisms and facilitates strategic integration (GO-Science, 2020). Nevertheless, it has been observed that, despite the ambitious vision pursued, limitations persist in the scope of engagement with diverse expert perspectives (Anon, 2024, Interview; Penn, 2024, Interview).

9.2.3.2 The List of GCSA based on Chronological Timeline

Since its systematic reform under the leadership of Sir David King, then GCSA, in 2002, the UK’s national foresight programme has initiated and conducted approximately 40 foresight projects over a span of two decades. These initiatives were typically designed to be completed within 12 to 24 months, with up to three or four projects being carried out concurrently during certain periods (Saritas, 2013; Keenan and Miles, 2008). The choice of themes and methodological approaches varied significantly according to the expertise, scientific orientation, and policy sensitivity of the serving GCSA at the time. Moreover, shifts in Prime Ministerial leadership, government departmental restructuring (e.g., DTI → BEIS → DSIT), and major external disruptions such as Brexit (2016) and the COVID-19 pandemic (2020) have also played a pivotal role in redefining the scope and focus of these projects.

“We can call it – the CSA network. ” (Sir Wilson, 2024, Interview)

“We aimed to complete the projects within 24 months, and many of them took less than 18. The duration of the projects is important, because it determines what’s relevant — you need to capture how people saw the future from the point in time when the project was established. The context in which you do the foresight really matters.” (Collins, 2024, Interview)

“...It changes very fast and the political impact, the party-political impact on how policy is developed is much greater than it is in most Western European countries.” (Collins, 2024, Interview)

1. Sir David King (2000–2007) — Emphasis on Science-Led Competitiveness and Existential Risk Mitigation

A chemist and former Professor of Physical Chemistry at the University of Cambridge, Sir David King is widely credited with elevating science-based competitiveness and risk foresight to the core of national policymaking. Under his stewardship, projects such as Cognitive Systems (2004), Flood and Coastal Defence (2004), and Cyber Trust and Crime Prevention (2006) sought to address future threats at the intersection of advanced technologies and societal security (Keenan and Miles, 2008). Notably, the Flood and Coastal Defence initiative brought critical attention to the risks of coastal erosion and flooding exacerbated by climate change, laying the groundwork for his later engagement with international climate policy, including the founding of the Centre for Climate Repair at Cambridge in 2019. Sir David was instrumental in repositioning foresight not merely as a horizon-scanning exercise but as a strategic instrument for national risk scenario management (Saritas, 2013). His tenure is characterised by the fusion of threat-based strategic thinking and science diplomacy, reimagining science not as a passive advisory function but as a strategic asset in national security and global cooperation. Central to this transformation was the mutual trust between the GCSA and key political leaders, particularly Prime Minister Tony Blair, whose deep regard for scientific counsel enabled the institutional embedding of the GCSA in high-level policy design. The fact that science could serve as a proactive component of strategic planning, rather than a reactive support mechanism, owes much to the strength of this political-scientific partnership.

“David King really started the process of Foresight studies. Before I became the Chief Scientific Adviser at the Department for Transport in 2006, I led a Foresight study on Cyber Trust and Crime Prevention — the fourth project, which was completed in 2004 — when David King was the UK Government’s Chief Scientific Adviser and Head of the Office of Science and Technology.” (Collins, 2024, Interview)

2. Sir John Beddington (2008–2013) — Integrated Responses to Complex Crises through Scientific Modelling

An eminent figure in evolutionary biology and ecology, Sir John Beddington prioritised the use of system-based predictive models and scenario analyses to address complex global crises. His tenure marked a pivotal phase in which sustainability, public health, climate, and technological innovation converged as core foresight themes. Projects such as Land Use Futures, Technology and Innovation Futures, and Infectious Diseases underscored this interdisciplinary trajectory, with foresight beginning to serve as a formalised mechanism for cross-departmental policy design. Among these, Land Use Futures stood out for its integrative approach, employing quantitative simulations to map the tensions and trade-offs between agriculture, energy, urban development, and ecosystem conservation. The project involved substantial collaboration across more than eight central government departments and agencies, including DEFRA, DLUHC, and DfT, and is often cited as a model for how foresight can operate not merely as a forecasting tool, but as a platform for interdepartmental strategic alignment (GO-Science, 2021a). Other key initiatives under Beddington’s leadership, such as Global Food and Farming Futures (2011) and Mental Capital and Wellbeing (2008), exemplified a shift towards mapping structural challenges—ranging from food security and ageing populations to mental health—through science-based scenarios and policy options. His approach introduced a more layered and interpretive method for structuring and responding to complex policy issues.

“In the right places, and in both cases, there would have been someone focusing on global food and farming, which was very much John Beddington's project. He saw it as something that really needed to be brought to the attention not only of politicians, but also of the general public and industry. He foresaw that sooner or later, we would need to become much more self-sufficient in food than we were at the time, as we were clearly importing large amounts of food even then. We also recognized the criticality of global transport systems for getting food to our shores.” (Collins, 2024, Interview)

“John Beddington was very passionate about foresight and conducted many foresight studies. He realized that without solid scientific expertise across Whitehall, foresight recommendations wouldn’t be effective unless each department had a CSA. The CSA would act as an ambassador, owning the outcomes of foresight studies and translating them into policy. “ (Collins, 2024, Interview)

3. Sir Mark Walport (2013–2017) — Expanding the Nexus of Cities, Technology, and Civil Society

A physician and former Director of the Wellcome Trust, Sir Mark Walport placed strong emphasis on balancing scientific rationality with social legitimacy. Under his stewardship, the practice of foresight began to shift from a central government-led, technology-driven exercise to a more layered and participatory process that incorporated civic engagement and social acceptance. Walport sought to reframe foresight not merely as a tool for scenario construction or technological forecasting, but as a deliberative and participatory process for strategic planning. This approach was epitomised in his flagship initiative, *The Future of Cities* (2014). Rather than a singular report, *The Future of Cities* operated through partnerships with key UK cities—including London, Bristol, Manchester, and Glasgow—and involved more than 50 local roundtables, expert panels, and citizen forums. It has been lauded as a pioneering example of integrating local contextuality and qualitative, data-informed insights into national strategic planning. The project demonstrated the potential for central government foresight to evolve from a vertical model to a more horizontal, collaborative form of governance. Moreover, in *Technology and Innovation Futures* (2017), Walport shifted the emphasis from mere technological anticipation to broader concerns around social acceptability and democratic legitimacy. He underscored the imperative of embedding citizens' expectations, values, and ethical considerations into the design of technology policy—thus challenging linear narratives of technological optimism (GO-Science, 2021c). His leadership exemplified an ambition to transform scientific advice from laboratory-bound precision to a socially integrative capacity. Drawing on his dual expertise in medical research and public health, Walport worked to establish trust-based mechanisms between science and society. His foresight strategies sought to embed empirical public knowledge and institutional sensibility into policy design, alongside quantitative analyses.

“Mark Walport was interested in the foresight project. We had lots of one-to-one discussions, and we ran these meetings together.” (Sir Wilson, 2024, Interview)

4. Sir Patrick Vallance (2018–2023) — Managing Complex Crises in the Era of Brexit and the Pandemic

Sir Patrick Vallance, a biomedical scientist and former Head of Global R&D at GSK, focused his tenure on institutionalising the structural coupling between scientific expertise and policy-making. His term coincided with two overlapping national crises: the destabilisation of regulatory norms post-Brexit, and the public health emergency of the COVID-19 pandemic. In response, Vallance spearheaded the institutionalisation of real-time feedback loops between science and policy through the Scientific Advisory Group for Emergencies (SAGE). This enabled a shift wherein science functioned not as a post hoc justification for political decisions, but as a real-time operational bedrock of public policy. The ensuing COVID-19 Pandemic and Emergency Response programme evolved into a comprehensive crisis foresight system, encompassing risk communication, scenario branching, and multi-model policy response frameworks (UK Government, 2024). The initiative was designed to mediate between scientific evidence, political decision-making, and civic communication—advancing the normative and accountable ethos of public science. Vallance maintained that policy decisions should be grounded not solely in political discretion but in explainable, data-driven rationale. He further posited that scientific uncertainty, if handled with transparency and effective communication, could serve as a foundation for public trust. Nevertheless, the nature of the emergency context inevitably necessitated a focus on short-term responsiveness rather than long-term strategic foresight. This limitation reflected the temporal constraints of crisis governance. In parallel, Vallance oversaw projects such as AI and the Public Sector, Net Zero and Clean Growth Futures, and The Future of Mobility—each articulating a vision of harmonising the governance of emerging technologies with social acceptability, and aligning long-term infrastructure planning with ecological transitions. Above all, Vallance’s leadership was instrumental in elevating evidence-based policymaking from a mere reference point to a central pillar of policy legitimacy and a strategic asset for restoring public trust. His approach demonstrated, particularly in times of crisis, that science need not serve as a vehicle for political evasion or justification, but rather as a legitimate foundation for comprehensive policy design and risk communication. It stands as a compelling empirical case of how science can underpin legitimacy across the full spectrum of policy responses.

“I had a couple of conversations with Patrick Vallance. He is also a medical scientist, but a life scientist rather than a medical doctor. A life scientist understands that life sciences are grounded in biology, and biology is evolutionary. I think Patrick was much more broadminded regarding other branches of science and their contributions. ” (Collins, 2024, Interview)

5. Dame Angela McLean (2023–Present) — Strengthening Systems-Based Strategies through Complex Simulation

Formerly a professor of mathematical biology at the University of Oxford, Dame Angela McLean has underscored the role of complex systems theory and mathematical modelling in shaping simulation-based strategic policymaking. Her tenure marks a clear transition in foresight methodology—from qualitative scenario planning towards the development of model-based frameworks that account for policy interactions. Recent initiatives, such as Future of the Subsurface (2024), Health Resilience to Long-Term Crises, and Future of the Classroom, reflect an integrated systems approach to urban planning, healthcare, and educational resilience. These projects signal a deliberate shift away from linear notions of ‘preparing for foreseeable futures’, in favour of constructing adaptive ecosystems capable of responding to complex, non-linear risks. Her leadership has also been significantly shaped by critical reflections on the government’s response to the COVID-19 pandemic. Notably, internal reviews have acknowledged that the foresight function was structurally sidelined during the pandemic due to the urgency of crisis response. This recognition has prompted a functional recalibration of the existing foresight architecture, not merely as a procedural reform, but as a response to growing policy demands for foresight systems that prioritise risk sensitivity and system dynamics.

“There were, of course, difficulties making it work during COVID, but I’m absolutely positive that Angela understands its (Longer-term future) importance, as she often emphasized.” (Collins, 2024, Interview)

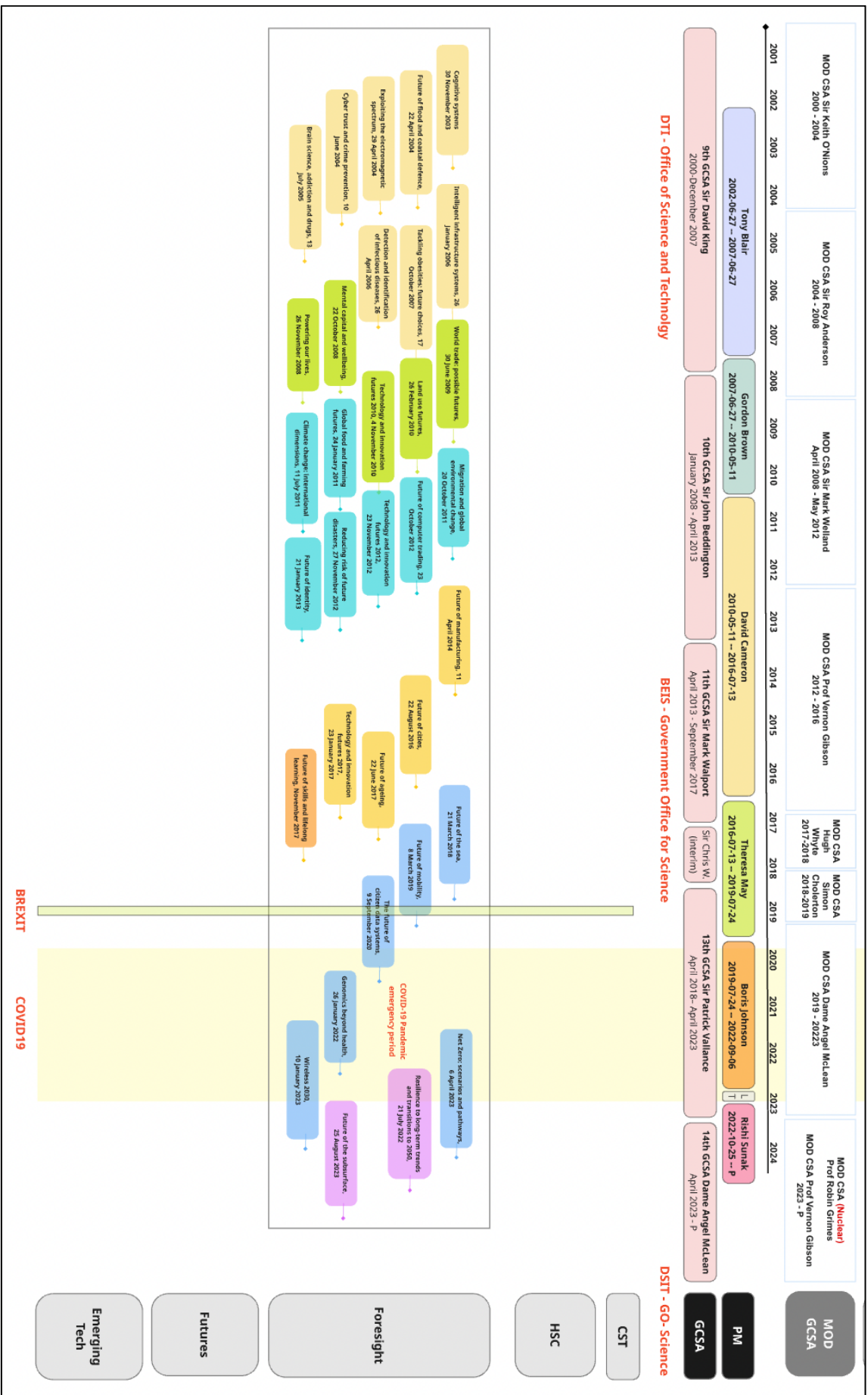
However, the extent to which foresight initiatives are structurally embedded in the policy-making process remains constrained by the institutional culture of Whitehall. The British executive’s policymaking tradition is characterised by ministerial supremacy, a pronounced risk-averse orientation, and a pattern of siloed governance—all of which pose inherent structural challenges to long-term, uncertainty-based foresight integration. For instance, the tradition of ministerial supremacy tends to restrict the policy impact of foresight products developed by expert groups or at mid-administrative levels, as these outputs are often filtered or reshaped through political discretion. Moreover, Whitehall’s performance management systems are primarily geared towards short-term, quantifiable targets, rendering foresight a lower organisational priority due to its inherently long-term and probabilistic nature. The

vertical ministerial silos entrenched in departmental functions further hinder the cross-sectoral, inter-ministerial coordination envisioned by foresight methodologies, thus limiting their operational efficacy. Additionally, political leadership often demonstrates a low tolerance for uncertain, science-based scenario outcomes. This risk-averse political rationality can result in foresight outputs being reframed as neutral reports or politically de-emphasised—a dynamic that undermines their potential as proactive tools for policy formulation. These politico-bureaucratic mechanisms risk reducing foresight from an instrument for policy to a mere explanatory artefact of policy.

“The level of political interference in the Foresight studies was significantly higher than in earlier periods, which affected their quality. The characteristics of these later studies differ from those conducted between 2000 and 2009 — the so-called ‘noughties’. From 2010 onwards, the studies became increasingly politicized, which has had a lasting impact on the UK Foresight programme.” (Collins, 2024, Interview)

“I’m a believer in strategic planning. The Blair government focused more on strategic planning. The Labour Party has always focused on future planning, developing strategies as if they were going to be in power for a long time. The Tory Party, on the other hand, assumes the market will handle the future, which is short-term, so anything beyond three to five years is generally not considered interesting. They have tended not to engage in strategic planning...” (Collins, 2024, Interview)

In sum, while the UK's foresight programme has undeniably accumulated institutional value through the integration of science and strategic planning, its practical impact remains tempered by structural constraints within the Whitehall system. These include the distribution of administrative authority, limited interdepartmental coordination, and the prevailing political logic. Such conditions suggest that embedding foresight into the policy process is not merely a technical endeavour, but a transformative challenge requiring a systemic reconfiguration of administrative culture, institutional design, and governance structures.



[Figure 20] Chronological Timeline of UK Foresight Projects. by Author

9.2.4 The Case of Foresight Programme: Future of Cities Project

9.2.4.1 Core Objective

The Future of Cities project, led by the UK GO-Science between 2013 and 2016, was a strategic foresight initiative designed to identify the long-term challenges and opportunities facing urban areas. Its overarching aim was to enable policymakers to develop resilient and sustainable urban strategies. Recognised as one of the most comprehensive and participatory foresight programmes in the history of UK policymaking, the project was launched under the leadership of the then GCSA, Sir Mark Walport (GO-Science, 2016c).

Unlike conventional technology-driven outlooks, this initiative reconceptualised urban issues as complex systemic challenges that intersect with national economic growth, social cohesion, climate change, and technological adoption. Cities were no longer seen as discrete policy units, but rather as hubs of interdependent governance and circular resource flows. As centres of population and employment, and loci of cultural, institutional, and environmental transformation, cities were increasingly regarded as testbeds for national policy transitions over the next five decades (GO-Science, 2016a).

The concept of urban visioning can be traced back to the community visioning movements and strategic leadership theories that emerged in North America during the 1970s–1990s (Shipley & Michela, 2006). Influenced by figures such as Tom Peters, this approach highlighted the significance of visionary planning. According to Gaffikin and Sterett (2006) and Dixon and Tewdwr-Jones (2021), contemporary trends have evolved from a technological focus to a participatory, foresight-oriented urban visioning process. Notable international examples include Atlanta’s Vision 2020, as well as urban planning visions in Phoenix and Portland, which exemplify the interplay between sustainability, community engagement, and long-term planning (Pettibone, 2016; Iwaniec & Wiek, 2014). Within this global context, Future of Cities marked the UK’s first attempt to foster not only city-specific visions but also their alignment with national strategic priorities (GO-Science, 2016b).

A distinguishing innovation of the project was its inclusive engagement model, which encouraged collaboration across academia, consultancy, and civil society in order to inform public policy. Importantly, the initiative extended beyond central government, encompassing local contexts across the UK. During its course, GO-Science launched a series of smaller “city foresight projects” and selected nine exemplar cities—such as Birmingham, Manchester, and

Cambridge—from a total of 21, engaging with regional academia, civil society, and industry to co-develop locally grounded scenarios and strategies (GO-Science, 2016b).

This direction was closely aligned with the scientific leadership of Sir Mark Walport, who championed the notion that science should not merely serve as a predictive tool but should function as public science—a means of enhancing policy legitimacy and bridging the gap between civil society and technological governance. Walport envisioned Future of Cities not as a top-down strategic document but as a participatory foresight platform that meaningfully integrated local perspectives. According to a 2024 interview with Sir Alan Wilson, Walport demonstrated a resolute commitment to gathering a broad spectrum of ideas regarding the future of UK cities over the next half-century. Notably, he undertook visits to several key cities—including Bristol, Manchester, Sheffield, and Glasgow—personally attending numerous workshops and roundtables with local governance actors, academic communities, and civic groups. These visits were not mere symbolic gestures but reflected a deliberate “close-up leadership” approach whereby the GCSA actively mediated future-oriented scientific discourse and ensured that regional policy priorities informed national strategy. This practice exemplifies how Walport’s advisory role extended beyond analytical back-office functions, striving instead to embed social legitimacy and stakeholder relationships directly within the policy design process.

Meanwhile, the academic design and conceptual framework of the project were led by Sir Alan Wilson, Chair of the Lead Expert Group. Wilson sought to strategically integrate methodologies such as urban metabolism, spatial simulation models, and scenario modelling based on patterns of habitation, mobility, and consumption into the policy design process. His approach interpreted the city as an urban organism, focusing on visualising and modelling flows of resources, demographic structures, policy interdependencies, infrastructural burdens, and technological receptivity. This interpretive framework served not merely as a tool for scientific precision, but as a policy interpretive instrument, enabling policymakers to comprehend future complexity and interdependence through a more structural lens. Moreover, Wilson stressed that the project must not remain confined to the analytical bounds of a single discipline. He therefore assembled a diverse body of experts from sociology, economics, environmental science, urban planning, human geography, law, and science and technology policy, thereby establishing an interdisciplinary foresight structure. This structure did not manifest as a single report, but rather as a multi-format publication series—comprising Exploratory Essays, City Perspectives, and Thematic Analyses—each reflecting varied perspectives and theoretical frameworks. Crucially, the project extended beyond academic

analysis to deliver a dedicated Policy Profession Summary Report tailored to practical application by policymakers. Unlike conventional foresight reports that tend to focus on visioning, this document concentrated on actionable elements such as policy roadmaps, phased response strategies, and institutional integration pathways, thereby aiming to exert direct influence on both central and local government policy cycles (Wilson et al., 2016).

The initiative produced a total of 13 peer-reviewed practice papers, 21 exploratory essays, and 7 national scenarios, categorised into distinct series including the Exploratory Essays, City Perspectives, and the Policy Synthesis Report. The Policy Profession Summary Report, in particular, was designed to embed foresight into policy cycles by providing concrete roadmaps and institutional strategies for civil servants (GO-Science, 2016b). According to the project's main report *The Future of Cities: Overview of the Evidence* (GO-Science, 2016c), the intended audience encompassed not only central government officials but policymakers at all levels and scales. In the foreword, Sir Alan Wilson underscored the importance of evidence-based advice, noting that the report aims to forecast how people will live, work, and interact in cities up to the year 2065, based on scientific evidence and futures analysis.

"Science and evidence are vital to understanding what makes cities liveable and what drives economic growth. While new technologies and innovative design will play an important role, the future cannot be predicted with certainty. Policymakers must be equipped to think structurally about a range of possible futures—some of which are more desirable than others—if cities and their populations are to become more resilient and dynamic." (GO-Science, 2016c).

The core objective of this project was to supply robust evidence to inform decision-making—not only at the national level but also to address the demand for knowledge at the local level (Sir Wilson, 2024, Interview). This reflects the project's ambition to integrate foresight both vertically and horizontally between central government and local urban communities, representing an endeavour to pursue policy–knowledge–society initiatives capable of testing the strategic potential for long-term structural redesign.

"We organize public meetings - We had four public meetings and the future of cities in Manchester, Cambridge. It's just so Newcastle, Bristol or Birmingham, maybe Bristol." (Sir Wilson, 2024, Interview)

9.2.4.2 Core Approaches

The Future of Cities project was designed to depart from the traditional top-down model of urban policy formulation historically led by the central government in the UK (Sir Wilson, 2024, Interview). Instead, it was built upon three principal pillars: multiscalar awareness, horizontal governance, and cross-sectoral integration. These foundational concepts reflect an effort to reframe the city not as a set of discrete policy domains but as an interdependent system, thereby necessitating a policy design framework grounded in the logic of complex systems.

1. Analysis Based on Six Key Themes: a Systems-Oriented Interpretative Framework

The project employed an analytical framework structured around six thematic domains: Urban Economy, Governance, Urban Form, Living, Infrastructure, and Urban Metabolism. This was not a simple categorisation but a relational lens to examine the interactions among core urban functions—for instance, how infrastructure affects mobility and energy use, or how economic change reshapes governance needs. This shift from fragmented analysis to systemic interpretation contributed to greater policy coherence across departments.

“And we had smaller expert meetings — in fact, one of the things I was going to say to you is that the cities project involved nearly every government department. Yeah, we convened meetings of representatives from 14 government departments.” (Sir Wilson, 2024, Interview)

2. Regional Collaboration and Embedded Localism: Structuring Central-Local Linkages

The project partnered with 19 major UK cities to incorporate local perspectives into the foresight process. Through city-level workshops, expert interviews, and citizen forums—coordinated with local officials—bespoke *City Insights Reports* were developed. These were not merely consultative outputs but pilots for testing the regional applicability of national strategies, while respecting local path dependencies and contextual specificities. This model encouraged a move towards co-produced strategic policymaking between central and local authorities.

3. Interdisciplinary Framework for Policy Integration

Urban challenges were approached as complex, interwoven phenomena rather than isolated sectoral issues. Accordingly, the project embraced an interdisciplinary approach, drawing from urban engineering, sociology, environmental policy, economic geography, futures studies, and ecology. These perspectives were integrated through forums, roundtables, and expert panels, enabling shared understanding and the creation of an intermediary vocabulary to bridge

epistemic divides. The project thus illustrated foresight as a knowledge-based negotiation process, institutionalising interdisciplinary collaboration within UK strategic policymaking and enhancing internal research capacity.

9.2.4.3 Management and Operational Structure

The UK Government Office for Science's Future of Cities project employed a dual-framework governance model, combining central coordination with decentralised advisory networks. This approach enabled a dynamic interplay between top-down oversight and bottom-up civic and expert engagement (Sabel and Zeitlin, 2012). Designed as a hybrid system, it aimed to balance policy expertise with local relevance and academic rigour with practical feasibility (Kuhlmann and Rip, 2018).

“What I said, actually — which Mark Walport agreed with, and the rest of my group agreed with — is that we didn't want to do what a typical Foresight project did, which was to produce a big report. Because almost always, what happens to those big reports is that they end up on a shelf and no one ever looks at them again.” (Sir Wilson, 2024, Interview)

The core components were as follows:

1. Central Planning and Coordination: GO-Science as Metagovernance Authority

GO-Science held overarching responsibility for strategic direction, budgeting, interdepartmental coordination, and quality assurance. Acting as a metagovernance body, it promoted science-informed policymaking beyond traditional departmental silos (GO-Science, 2016b). Regular engagement with the Cabinet Office and departments responsible for industrial and regional policy reinforced cross-government integration.

2. Lead Expert Group: Mechanism for Academic Design and Discourse Facilitation

Chaired by Sir Alan Wilson, the Lead Expert Group included twelve senior academics and professionals across disciplines such as urban engineering, social policy, and innovation. Rather than acting as a passive advisory body, it actively shaped the project's thematic direction and bridged research with policy application (GO-Science, 2016a; gov.uk, 2024).

3. Local Partnership Networks: Merging Top-Down Structures with Bottom-Up Participation
Nineteen major cities—including Bristol, Manchester, and Glasgow—established local networks involving municipal officials, regional researchers, civil society, and business leaders. Under GO-Science contracts, these groups produced evidence-based city reports. Citizen workshops and local consultations fed into *City Insights* reports, which in turn informed national scenario planning (GO-Science, 2016a; Wilson et al., 2016). This participatory model went beyond consultation, enabling genuine policy co-design.

4. Output Structure and Policy Utility: A Multilayered Content Ecosystem

The project yielded over 35 discrete outputs, categorised into four tiers according to their intended purpose: (1) Exploratory Essays (academic and theoretical focus), (2) City Perspectives (region-specific insights), (3) Scenarios (national-level policy options), and (4) Policy Briefs (targeted at decision-makers).

“I had a very naïve belief that we could actually make long-term forecasts. But not long after, I realised that was nonsense — you just can’t do long-term forecasting. There are simply too many uncertainties. There are literally too many uncertainties to make long-term forecasts.”
(Sir Wilson, 2024, Interview)

“What you can do is explore long-term scenarios.” (Sir Wilson, 2024, Interview)

This structure facilitated tailored engagement across audiences—from academics to policymakers and urban planners—and is recognised as a model for inclusive, responsive knowledge dissemination (GO-Science, 2016b).

9.2.4.4 Key Foresight Methodologies Applied

The Future of Cities project represents a strategic foresight initiative aimed at enhancing long-term adaptive capacity and urban resilience in the UK. Rather than limiting itself to the projection of future trends, the project integrated a variety of foresight methodologies to analyse the non-linear evolution of complex urban systems and to deliver actionable insights for policy design. The applied techniques were carefully structured to balance theoretical rigour with practical utility (GO-Science, 2016a; Wilson, 2024, Interview).

1. Scenario Planning

Recognising the multiplicity of urban futures, the project adopted scenario planning as a core approach. Scenarios such as *Major Cities Empowerment*, *London-centric Growth*, and *Smaller Cities Focus* represented divergent trajectories shaped by political, social, technological, and environmental dynamics (GO-Science, 2014). These qualitative, logic-based scenarios were developed through broad stakeholder engagement—including government bodies, local authorities, and civil society—ensuring they served not only as explorations of plausible futures but also as platforms for collective visioning and deliberation. The scenarios later informed policy simulation workshops for ex-ante evaluation of potential impacts (GO-Science, 2016).

2. Backcasting

To enable goal-oriented planning, the project applied backcasting to work backwards from normative visions such as *Net-zero Cities* and *Socially Inclusive Cities*. This approach identified strategic interventions, transition points, and policy lock-ins, facilitating the development of coherent policy pathways. Backcasting also explored interdependencies across policy instruments, highlighting the need for integrated policy mixes over isolated solutions (GO-Science, 2016).

3. Participatory Foresight and Delphi

The initiative emphasised inclusive foresight through local *Urban Rooms*—interactive forums where citizens, policymakers, and experts co-developed scenarios for their communities (GO-Science, 2016). In specific areas, a modified Delphi method facilitated structured exchanges between expert panels and citizen groups, supporting consensus-building around priorities. This participatory model enhanced political legitimacy and broadened public ownership of foresight outcomes.

4. Urban Metabolism Analysis

Viewing cities as complex socio-technical systems, the project integrated urban metabolism analysis to assess how urban functions—transport, housing, industry—drive resource flows and emissions (GO-Science, 2015). This enabled quantification and visualisation of systemic impacts, informing material- and energy-efficient strategies. For example, simulations explored how urban densification could reduce traffic volumes and improve energy efficiency.

5. Horizon Scanning

To incorporate uncertainty into long-term planning, the project conducted structured horizon scanning. This extended beyond trend monitoring to identify weak signals, wild cards, and cross-system dependencies (GO-Science, 2016c). Outputs—such as *Trend Decks*, *Foresight Briefs*, and *Tech Innovation Summaries*—supported cross-departmental strategic thinking. Particular attention was paid to transformative technologies like AI, autonomous transport, and platform-based urban economies, and their potential to reshape infrastructure and urban life.

9.2.4.5 Challenges in the Foresight Programme and the Future of Cities Project

Despite its comprehensive scope and experimental character, the Future of Cities project encountered numerous structural and operational challenges within the UK's entrenched political and bureaucratic system in its efforts to institutionalise strategic foresight and integrate its findings into policy decision-making. According to interviews with UK-based scientists, these challenges are not unique to the Urban Futures project alone. This section critically examines four key limitations that emerged during the programme's implementation, highlighting their broader implications for the development of the UK's national foresight system.

1. Limited Policy Integration and Institutional Invisibility

While the project sought to bridge central and local governance through strategic linkages, a significant proportion of its outputs remained confined to the status of analytical reference materials rather than becoming embedded within active policy cycles. In particular, the absence of structured mechanisms for budget allocation, legislative integration, or formal policy adoption at the local level curtailed the downstream impact of its foresight recommendations (GO-Science, 2016c). This reflects a broader issue of invisible foresight architectures—where science-based visions are produced but fail to gain institutional visibility or traction within decision-making processes (Anon, 2024, Interview).

2. Uneven Local Engagement and Disparities in Participatory Capacity

Although the project successfully collaborated with major cities such as Bristol, Manchester, and Glasgow, significant disparities were observed in the participatory capacity and administrative readiness of different local authorities. While some cities leveraged academic networks and civil society engagement to co-design place-based scenarios, others were more passive recipients of central government guidance. This imbalance exposed the practical

limitations of implementing a hybrid top-down/bottom-up governance framework and underscored the persistent gap between policy ambition and institutional capability at the sub-national level (Anon, 2024, Interview).

3. Interdepartmental Fragmentation and Weak Collaborative Structures

Urban foresight inherently requires coordinated responses across multiple domains—transport, housing, energy, social cohesion—each of which typically falls under the remit of separate Whitehall departments. Despite efforts to produce cross-sectoral policy roadmaps, the project revealed a lack of integrated functional mapping across departments. In practice, some departments treated foresight outputs as outside their jurisdiction or deferred responsibility to others, illustrating how a lack of ownership over strategic initiatives can result in fragmented governance and diluted implementation (GO-Science, 2016b).

“I always felt that it was unfortunate that academic academic academics needed to compete over such like such things because They could compete over over publications which aren't directly affecting the public good, affecting the well being of the country. But I did think it was rather unfortunate they felt they had to compete over things which were to do with the well being of the country Which foresight is about, but they didn't seem to be able to get out of that mindset.” (Collins, 2024, Interview)

“Another silo. They didn’t seem to have a mode of behavior oriented toward collaboration, and in many ways, they still don’t. I still find academics very combative.” (Collins, 2024, Interview)

4. Absence of Continuity and Follow-through Mechanisms

The conclusion of the Future of Cities project in 2016 marked the end of its formal institutional life, with no dedicated successor body or continuity mechanism in place. While individual ideas and outputs were subsequently adopted in various city-level strategies, the absence of a structured follow-up framework—such as roadmap translation, embedded evaluation metrics, or policy learning cycles—meant that the project lacked the long-term sustainability needed to institutionalise its strategic potential (Wilson et al., 2016). This reveals a structural vulnerability in translating short-term foresight programmes into enduring governance infrastructures.

“I think the continuity of the project really depends on whether the Prime Minister and the Cabinet trust what science is doing, and whether they understand the kind of impact it has on policy. But that’s not an easy thing for governments to do. For example, if you truly understand

that climate change is an existential threat — if you’re genuinely concerned about it — then you simply can’t ignore it. Science and scientists have shaped the modern world and modern life as we know it. Yet, many governments seem reluctant to hear that — and perhaps even more reluctant to believe it.” (Sir King, 2024, Interview)

“Once they’ve been published, the Government Office for Science simply moves on to the next one — that’s it. I didn’t, and don’t, attend any follow-up meetings after publication. I’m not sure about the continuity of those foresight projects; all I can say is that during my time as CSA at MHCLG and DLUHC, I never heard of, nor was I ever involved in, any such meetings.” (Penn, 2024, Interview)

Collectively, these challenges illustrate the dual nature of the Future of Cities project: while it served as a pioneering model for inclusive and systems-oriented foresight, it also exposed the critical need for more robust integration across three dimensions—policy connectivity, distributed implementation capacity, and institutional continuity. Addressing these dimensions will be essential for the successful maturation of national foresight ecosystems in the years ahead.

9.2.5 Concluding Implications: A Three-Pillar Assessment: Mission, Evaluation, and Talent

The Future of Cities project and the broader institutional practices of the UK’s National Foresight Programme constitute an instructive case in understanding both the potential and limitations of strategic foresight when confronting complex socio-technical challenges. This section synthesises the lessons learned, proposing a framework for future foresight-informed policymaking built upon three interdependent pillars: (1) Mission Implementation and Support; (2) Evaluation; and (3) Talent Development.

1. Mission Implementation and Support (Development and Operation Strategy)

The Future of Cities project represented a paradigmatic shift from conventional function-based urban policy analysis towards the systemic modelling of cities as complex, interdependent organisms. However, its transformative vision was constrained by the absence of a robust operational mechanism. Future foresight programmes must therefore be underpinned by executable mission strategies that bridge national and local levels through co-developed

implementation roadmaps, budget-aligned coordination mechanisms, and cross-departmental meta-governance structures.

Urban strategies must not remain as conceptual outputs; they must be operationally integrated into both central government's strategic priorities and region-specific policy frameworks. Achieving this shift from foresight as prediction to foresight as anticipatory governance requires that implementation logic be embedded from the outset.

2. Evaluation (Monitoring and Evaluation Strategy)

Although the project produced an array of outputs—including Exploratory Essays, City Perspectives, and Scenario Reports—it fell short of embedding these within a structured evaluation cycle. Specifically, the outputs were not subject to systematic monitoring based on quantitative metrics, strategic feedback loops, or policy iteration benchmarks. This highlights a broader institutional gap in the embedding of evaluation within UK foresight architecture.

Future foresight initiatives should be supported by performance indicator frameworks, multi-dimensional policy evaluation systems, and simulation-based scenario testing. In particular, complex systems-based modelling tools should be integrated to evaluate trade-offs and interdependencies across policy domains, ensuring foresight is not only insightful but actionable and assessable.

3. Talent Development (Talent Development Strategy)

The project showcased the value of interdisciplinary policy design platforms, involving expertise from urban engineering, environmental science, economic geography, and technology policy alongside civil society participation. However, these networks were not institutionally sustained post-project, revealing a deficit in long-term capability retention.

A sustainable foresight ecosystem demands systematic strategies for talent development, including:

- The mainstreaming of foresight curricula across departments,
- Co-learning platforms bridging civil servants and scientific communities,
- Career development incentives that reward the accumulation of strategic foresight competencies over time.

Ultimately, foresight is not driven solely by analytical tools or technological sophistication; it hinges upon cultivating the mindsets and knowledge brokers capable of interpreting, integrating, and mobilising futures thinking across policy domains. The human infrastructure of foresight remains its most critical determinant.

In conclusion, while the Future of Cities project provides a compelling microcosm of strategic foresight in action, the broader institutional ecosystem of the UK's Foresight Programme demands equal analytical attention. The programme as a whole exemplifies an evolving model of anticipatory governance—one that seeks to embed long-term, systems-based thinking within the routine processes of national policy design.

The cumulative experience of the Foresight Programme reveals both structural strengths and systemic vulnerabilities. On the one hand, it has successfully established participatory and interdisciplinary foresight as a legitimate function within the machinery of government. On the other, the absence of robust implementation pathways, embedded evaluation frameworks, and a sustainable pipeline of strategic talent has limited its institutional traction.

To fulfil the transformative potential of foresight, the UK government must advance a more deeply embedded, policy-integrated foresight infrastructure. This requires the strategic alignment of three interdependent pillars: mission execution that translates vision into operational strategy; evaluation mechanisms that ensure learning, accountability, and iterative refinement; and talent strategies that cultivate a permanent cadre of foresight-literate civil servants and policy entrepreneurs.

Ultimately, foresight must be understood not as a peripheral or ad hoc activity, but as a core capability of modern governance—one that enables public institutions to navigate uncertainty, negotiate intergenerational priorities, and co-produce socially legitimate futures. The UK's experience offers a valuable, if still evolving, template for how such an anticipatory policy culture might be institutionalised and scaled across democratic systems.

9.3 Conclusion: Reimagining Strategic Foresight as a Systemic Policy Infrastructure

The juxtaposition of the MOD Defence Futures and the GO-Science Urban Futures reveals the UK's evolving, yet still fragmented, approach to institutionalising strategic foresight. Despite notable innovations in both domains—be it the MOD's integration of long-term global trends into defence capability planning or GO-Science's participatory scenario-building in urban governance—the lack of an embedded, system-wide foresight logic remains a critical limitation. This chapter draws upon the comparative insights of both cases to articulate two overarching imperatives for the next phase of UK foresight governance: (1) institutionalising foresight throughout the policy lifecycle, and (2) fostering a co-evolutionary governance model between central and local governments.

1. Institutionalising Strategic Foresight Across the Policy Lifecycle

The UK's Whitehall-centric governance model, rooted in ministerial discretion and bureaucratic expertise, has historically limited foresight activities to isolated visioning exercises, lacking recursive integration into mainstream policy cycles. The Future of Cities initiative, for example, generated high-quality scenario tools and thematic insights, yet lacked an institutional mechanism to feed these into subsequent rounds of planning, budgeting, or evaluation. Similarly, while Defence Futures successfully aligned with capability development frameworks, its foresight methodologies were not fully embedded into the broader ROAMEF (Rationale–Objectives–Appraisal–Monitoring–Evaluation–Feedback) policy logic.

A shift toward full lifecycle integration requires two structural adjustments:

- **Embedding Foresight within ROAMEF:** Foresight tools such as backcasting, scenario simulations, and early signal detection must be integrated across all ROAMEF phases. This would establish a looped planning mechanism, whereby strategic insights and data from evaluation and feedback stages actively inform new cycles of rationales, objectives, and appraisals.
- **Developing Strategic Performance Indicators (SPIs):** Traditional evaluation frameworks are predominantly focused on short-term outputs. SPIs—such as adaptive resilience to complex risks, long-term system responsiveness, and institutional robustness—must be developed to assess the strategic depth and foresight-readiness of

public programmes. These indicators should become integral to both intra- and interdepartmental performance reviews.

Institutionalising foresight as a structural logic rather than an episodic tool ensures that long-term thinking becomes routine and actionable across the policy ecosystem. Rather than creating new foresight units, enhancing the capacities of existing institutions—particularly GO-Science, the CSA Roundtable, and relevant departmental strategy units—offers a more pragmatic and cost-effective path.

2. Establishing a Co-evolutionary Strategic Framework Between Central and Local Governments

Both Defence and Urban Futures have illustrated the importance of spatially differentiated foresight, yet the mechanisms for linking local experimentation with national strategy remain underdeveloped. Future of Cities, in particular, demonstrated how regionally rooted foresight—through Local Insight Reports, stakeholder roundtables, and city-level scenario labs—can enrich central planning. However, these initiatives often remain ad hoc and underfunded, lacking institutional continuity or strategic interoperability.

To enable long-term co-strategising between central and local actors, the following instruments are essential:

- **Local Strategic Innovation Fund:** Dedicated funding should be allocated to enable local governments to initiate foresight exercises aligned with their spatial, environmental, and demographic contexts. Such a fund would allow cities not only to adapt national priorities but to generate bottom-up strategies capable of informing central planning.
- **Regional Futures Labs:** Institutional hubs should be established to facilitate ongoing collaboration among academia, civil society, business, and local governance. These labs should function as mediating nodes, structurally embedded within a broader national foresight infrastructure and designed to translate regional knowledge into national foresight agendas.

This approach aligns with the Quintuple Helix model of innovation governance, recognising the necessity of co-evolution among government, academia, industry, civil society, and the natural environment. It also reframes foresight from a merely technocratic instrument into a democratic and ecological transition strategy—particularly relevant given the UK's commitments to net-zero and sustainability transformation.

Ultimately, the Defence and Urban Futures cases together underscore that foresight must transcend its identity as a methodological toolkit. It must evolve into a distributed infrastructure for systemic resilience—embedding long-termism, anticipatory learning, and cross-scale integration across the machinery of government. Realising this vision requires not only refined analytical tools but also adaptive institutions, participatory architectures, and a strategic cadre of professionals trained to navigate complexity and shape futures collaboratively. Only then can the UK's foresight architecture move from episodic insight-generation toward sustained, structural influence in shaping policy futures.

Chapter 10 Discussion

10.1 Introduction

This chapter synthesises preceding empirical findings and conducts a comparative evaluation of strategic foresight practices in the UK and the US. The aim is to generate insights for designing future national-level foresight systems. Rather than offering a descriptive account, the chapter seeks to establish a generative theoretical foundation for integrated, policy-operable foresight mechanisms.

Section 10.2 presents a structured comparative assessment of key strategic foresight models in the UK and the US, drawing upon analyses from Chapters 7 to 9. It begins by exploring the structural and cultural contrasts between the UK's centrally coordinated foresight programmes and the more decentralised initiatives of US federal agencies, with particular attention to institutional design and implementation approaches. The section then compares two flagship foresight initiatives: GST and GT examining their objectives, orientations, and operational methods. From a theoretical perspective, the US focus on executional feasibility, performance management, and institutional continuity offers valuable insights for this study. Accordingly, the research employs a conceptual framework built around three strategic pillars—Mission Implementation, Evaluation, and Talent Development—to structure a comparative analysis and inform the design of an execution-focused, sustainable policy mechanism.

Section 10.3 builds on this analysis to propose two redesigned foresight mechanisms that reconfigure the existing ROAMEF framework: a practice-oriented model and a science-based execution model. Both address key shortcomings in current systems—such as weak policy integration, limited follow-through, and insufficient inter-organisational collaboration—while remaining adaptable across administrative and political settings.

Finally, Section 10.4 synthesises the chapter's key arguments, underscoring that in an era of accelerating global uncertainty, strategic foresight must evolve into a systemic infrastructure that enhances national resilience and drives long-term policy innovation.

10.2 Comparative Evaluation: Towards New Mechanisms of Strategic Foresight

This chapter undertakes a comparative analysis of prominent strategic foresight programmes in the UK and the US, with a view to deriving critical insights for the institutional design and operational mechanisms of future national foresight systems.

In particular, this chapter focuses on two principal axes of comparison: the UK's National Foresight Programme under the GO-Science, and the Defence Futures initiative within the MOD. These are contrasted with the corresponding foresight functions undertaken by various U.S. federal agencies and, most notably, the GT series published by the NIC. The foresight systems of the two countries are grounded in fundamentally different organisational philosophies and design principles, as reflected in their structural configurations, policy linkages, and strategic planning practices. The core objective of this section is to explore these divergences through a structured analytical framework.

Section 10.1.1 offers a comparison between the centrally coordinated, policy-design-oriented foresight system led by GO-Science in the UK, and the more decentralised foresight activities autonomously undertaken by U.S. agencies such as the USDA, USCG, EPA, and DHS. This comparison elucidates differences in operational objectives, methodological application, organisational learning structures, performance evaluation mechanisms, and talent development strategies. In doing so, it highlights the respective advantages and limitations of centralised versus decentralised approaches to foresight execution and policy integration.

Subsequently, Section 10.1.2 turns to a comparative examination of the UK's GST reports, spearheaded by the MOD's Defence Futures, and the U.S. NIC's GT series. Both report series serve as forward-looking strategic instruments, offering long-range scenarios and strategic options. However, they diverge significantly in terms of institutional standing, policy influence, and feedback mechanisms. This comparison seeks to illuminate how strategic foresight contributes to the formation of national and international strategic discourse, while also examining the institutionalised linkages with broader policy communities.

The findings of this comparative analysis will underpin the theoretical justification and policy relevance of the three integrative mechanisms—Mission Implementation & Support, Evaluation, and Talent Development—proposed in Section 10.2. In doing so, the chapter aims

to provide a substantive contribution to the ongoing discourse on the future design and institutionalisation of national foresight systems.

10.2.1 The UK National Foresight Programme and Strategic Foresight in US Federal Agencies

Strategic foresight activities at the governmental level are shaped not only by the institutional configurations of authority in each country but also by broader governance philosophies and administrative cultures. In this regard, the UK and the US exemplify two markedly different models.

The UK's National Foresight Programme, centrally coordinated by the GO-Science, represents a policy-oriented and integrative framework of strategic foresight. It is characterised by its explicit linkage of anticipatory intelligence to departmental strategy formulation, thereby embedding foresight into the core processes of policy design. By contrast, the US has adopted a more decentralised approach. Strategic foresight activities are typically initiated and executed autonomously by individual federal agencies—such as the USDA, the USCG, the EPA, and the DHS—each tailoring its foresight practices to specific operational mandates.

This section offers a comparative examination of these two models, with a particular focus on structural, procedural, and epistemic dimensions. The analysis is organised around key themes including the degree of policy integration, the standardisation of methodologies, organisational learning mechanisms, performance evaluation systems, and talent development strategies. Through this comparative lens, the study elucidates the respective strengths and limitations of centralised versus decentralised foresight governance. It further reflects on the implications of each approach for systemic adaptability, the diffusion of innovation, and the alignment of long-term strategic objectives.

A. Historical Comparison

1. Initiation and Institutional Trajectory

The UK's government-led strategic foresight initiatives originated with the National Technology Foresight Programme, launched under Prime Minister John Major in 1993. Initially, the focus was on long-term technological projections, employing a forecasting model

rather than a broader policy design approach. A significant shift occurred in the early 2000s with the appointment of Sir David King as GCSA. Under his leadership, the programme was restructured from a technology-focused initiative into a policy-oriented tool aimed at addressing complex societal, environmental, scientific, and economic issues.

Sir David King promoted multidisciplinary, cross-departmental collaboration, initiating major foresight projects on topics such as obesity, flooding, cognitive ageing, and mental capital. These projects produced actionable policy recommendations and roadmaps. The Foresight Programme has since been consistently managed by the Foresight Team within GO-Science, maintaining institutional continuity despite changes in government and administrative reforms. As of 2023, it operates under the newly formed Department for Science, Innovation and Technology (DSIT), supporting science-based policymaking and long-term strategic planning.

In parallel, strategic foresight related to national security has remained institutionally distinct within the UK. Such efforts are administered separately by the MOD, particularly through the Defence Futures initiative and the Defence Science and Technology Laboratory (DSTL).

By contrast, the US approach to foresight has roots in military planning and intelligence analysis dating back to WWII and the Cold War. Scenario-based planning pioneered by Herman Kahn and the RAND Corporation laid the foundations for American foresight methodology. Kahn's work on strategic bombing, nuclear deterrence, and hypothetical conflict scenarios helped establish structured anticipation of multiple futures as a central tool in defence and intelligence policy.

Unlike the UK, the US has not pursued a centralised foresight agency managing cross-sectoral initiatives. Rather, it has opted for a decentralised institutional pathway, characterised by experimental and autonomous foresight activities embedded within individual federal agencies. Organisations such as the OMB, EPA, DHS, and USCG operate foresight initiatives tailored to their specific mandates, shaped by complex interactions between resource allocation, leadership vision, external partnerships, and internal capacity-building.

Within the legislative branch, efforts have been made to integrate future-oriented analysis into the policymaking process through both in-house research entities and external advisory institutions. This has supported the structural embedding of foresight into legislative support functions. Nonetheless, concerns persist regarding the fragmented nature of the current system, with recurrent calls for enhanced inter-organisational connectivity and the potential need for a more centralised foresight coordination mechanism.

2. Timeframe and Programmatic Cyclicity

A salient distinction between the strategic foresight programmes of the UK and those of the US lies in the clarity of forecast horizons and the regularity of publication cycles. In the UK, the GO-Science has institutionalised foresight as a structured, cyclical undertaking. The Foresight Programme, under GO-Science, typically operates thematic projects—such as Urban Futures, Mental Capital, or Flooding—over a defined period of two to three years. Each project is led by an independent Commissioner appointed by the GCSA and accompanied by a dedicated roadmap and final implementation report.

The MOD's Defence Futures team, by contrast, anchors its foresight efforts in the GST reports, which span a long-term forecast horizon of 20 to 30 years and are published on a quinquennial or sexennial basis. These reports serve not only as instruments of anticipatory governance but also as integrative frameworks for defence planning and international security dialogues.

In contrast, foresight activities within the US federal executive branch are characterised by a decentralised and agency-specific architecture. Each federal agency undertakes foresight according to its institutional mission, available resources, and policy priorities, with no overarching national framework. While the USCG has institutionalised a four-to-five-year strategic foresight cycle through the Evergreen Programme (e.g., Evergreen IV and V), most agencies operate on divergent timelines, reflecting their respective internal mandates. There is, therefore, a notable absence of uniformity in forecast horizons and programme periodicity across the U.S. federal system.

3. Leadership Architecture

The UK exhibits a centralised and formally institutionalised leadership structure in the domain of strategic foresight, with the GCSA playing a pivotal role. Reporting directly to the Prime Minister and Cabinet, the GCSA not only oversees the Foresight Programme but also integrates foresight into the broader landscape of national science and technology strategy. This leadership position confers legitimacy upon foresight as a core mechanism of evidence-based policymaking.

The GCSA convenes scientific advisory panels and external expert communities for each project and maintains formal pathways for communicating foresight outputs to ministerial and

Cabinet-level deliberations. In doing so, the UK has embedded foresight within the institutional heart of government, aligning scientific inquiry with strategic policy design.

By contrast, the US operates without a centralised leadership apparatus for strategic foresight. While the OSTP under the White House serves as the President’s principal science advisory body, it does not possess an explicit coordinating mandate for foresight activities across the federal government. Instead, agencies such as the NIC, the DHS, the EPA, and the USCG conduct foresight independently, each deploying distinct methodologies suited to their policy and operational needs.

Leadership in these cases tends to reside within internal units such as strategic planning divisions or policy analysis offices. Within the legislative branch, the GAO has developed its own foresight capacity, although Congress lacks a comprehensive institutional mechanism for coordinating long-term policy strategy. Recent efforts, such as the establishment of the FFCOI, have sought to foster inter-agency learning and informal leadership exchange. However, these remain non-binding, voluntary platforms with no formal policymaking authority.

In sum, while the UK has institutionalised foresight through a science-led leadership structure anchored by the GCSA, the US continues to operate a functionally diverse but fragmented foresight landscape. The absence of integrative leadership mechanisms in the U.S. poses limitations on the coherence and scalability of foresight practices across the federal system.

4. Vision and the Articulation of National Objectives

The UK’s foresight programmes are underpinned by two core visions: the construction of long-term national resilience and the advancement of science-informed policy design. These aims reflect an overarching effort to enhance both the predictability and adaptability of government policymaking in the face of future uncertainty and structural risks, through a robust evidence-based approach.

In particular, foresight activities led by the GO-Science and the MOD (through its Defence Futures initiative) place emphasis not merely on short-term crisis management, but on bolstering strategic resilience capable of withstanding and adapting to systemic transformations (GO-Science, 2014; MOD, 2022). For instance, the Foresight Programme under GO-Science has developed policy roadmaps across diverse domains—such as Mental Capital, Urban Futures, and Flooding—anchored in medium- to long-term outlooks. These

foresight initiatives have functioned as experimental platforms to support strategic planning capacity across government departments.

More broadly, the UK's foresight efforts have contributed to institutionalising a scientific foundation for policy design, aiming to internalise long-range strategic thinking within the governmental apparatus (King, 2004; Walker et al., 2010). However, the experience of the COVID-19 pandemic has intensified criticism regarding the limitations of GO-Science's foresight role—highlighting its frequent confinement to analytic and advisory functions, and its insufficient integration into direct policy execution.

By contrast, strategic foresight activities in the US tend to prioritise the dissemination of strategic thinking and the development of scenario-based responses to uncertainty. Rather than focusing on execution, the American approach is characterised by an emphasis on cognitive flexibility and the elevation of strategic awareness (NIC, 2021; Greenblott et al., 2018). A salient example is the GT series, produced under the auspices of the NIC, which serves as a strategic framework for exploring multiple alternative futures within the global environment. Intended primarily for presidential transition teams and policy practitioners, these reports function more as catalysts for strategic discourse than as prescriptive guides for action (Fuerth & Faber, 2012; Scoblic, 2020).

This orientation reflects the institutional configuration of the US federal system, wherein foresight practices are often pursued autonomously by individual agencies with their own leadership and resources. Consequently, strategic foresight in the US is frequently deployed as a vehicle for scenario training, simulation, and the cultivation of strategic cognition.

In summary, the UK's foresight system, if it is to exert a more substantive influence on policy formulation, must be accompanied by the institutionalisation of implementation mechanisms and evaluative feedback loops.

B. Programme Approaches

The UK and the US exhibit distinct characteristics in the operation of strategic foresight programmes, particularly in their problem-definition philosophies, analytical design tools, and implementation structures. Whereas the UK has engineered foresight as a government-led policy design support system with a high degree of institutional coherence, the US has adopted

a more decentralised and experimental mechanism, allowing individual agencies to adapt foresight methodologies to their respective needs and contexts.

1. Purpose Orientation and Problem Definition

The UK's Foresight Programme adopts a problem-driven approach, structuring each project to generate science-based long-term scenarios alongside policy recommendations and implementation roadmaps. A notable example is the 2004 *Flooding and Coastal Defence* project, which assessed climate-related flood risks and proposed a suite of mitigation instruments.

However, the direct integration of such foresight outputs into government policy remains limited, largely due to the administrative culture and decision-making architecture of Whitehall (Walker et al., 2010). Typically, foresight influences policy indirectly—principally through the Government Chief Scientific Adviser (GCSA) within GO-Science, who advises the Prime Minister and Cabinet. As such, foresight in the UK often serves more as a foundation for strategic dialogue and agenda-setting than as a formal decision-making mechanism.

In contrast, US foresight activities more commonly follow a cognitive or decision support model. For example, the US Coast Guard's Evergreen Programme aims to strengthen internal strategic thinking by facilitating collaborative scenario learning across leadership levels. Conducted on a four- to five-year cycle, its simulations address variables such as maritime security, climate change, and emerging technologies, enhancing strategic agility (Hines et al., 2018; USCG, 2019).

Similarly, the GT series led by the NIC does not seek to prescribe specific policy solutions but instead constructs alternative futures over a 15–20-year horizon. These scenarios provide senior policymakers with a cognitive framework for long-term strategic thinking (NIC, 2021).

2. Methodological Coherence and Policy Integration

The UK's foresight programme has historically been grounded in methodological rigour, characterised by multidisciplinary integration and the concurrent use of quantitative and qualitative techniques. Upon the initiation of a project, a lead advisory group comprising

scientists, social scientists, economists, and other experts is convened. This group collaborates with the GCSA and senior representatives from relevant government departments. Working in partnership with external research institutions, they undertake scenario analysis, technology trend assessments, and policy impact evaluations.

Each project adheres to a standard analytical structure encompassing: drivers of change, evidence base, scenario narratives, and policy options. The final reports serve as operational manuals to aid cross-departmental policy coordination and implementation.

In contrast, the US lacks a unified, government-wide foresight methodology. Instead, individual federal agencies apply varied techniques—such as simulation, horizon scanning, trend mapping, and system dynamics—according to their specific missions and objectives. These tools are used pragmatically to support core functions such as crisis response, technology monitoring, and risk assessment.

A distinctive feature of the US approach is its focus on building internal strategic sensitivity and analytical capacity. Rather than relying extensively on external consultants, agencies often develop foresight capabilities in-house. This internalisation allows foresight to operate as an embedded, learning-oriented tool for strategic planning and decision-making.

Agencies such as the DHS, DOE, and USCG have established training programmes and scenario-based modules aimed at enhancing capabilities in policy design, risk analysis, and crisis preparedness. In some cases, foresight techniques are structurally embedded in leadership development and talent management frameworks.

The USDA, through its Forest Service research units, has employed horizon scanning and ecosystem-based risk assessment to address long-term environmental challenges, including climate change and biodiversity loss. The Forest Futures Horizon Scanning project exemplifies efforts to engage external experts in detecting emerging risks and embedding them into research and policy design, with an emphasis on science-based governance and knowledge sharing.

Thus, although the US does not operate a centralised foresight framework, its practice is marked by operationally embedded, context-specific methodologies tailored to agency needs. This decentralised and adaptive approach contrasts with the UK's more coordinated, top-down model and reflects a field-based, learning-oriented mode of strategic foresight.

C. Mission Implementation and Support

For strategic foresight activities to be meaningfully integrated into the internal execution structures of an organisation, an organic alignment between the organisation's core mission, strategic planning, execution, and resource management architecture is imperative. Such integration transcends the notion of foresight as a merely consultative function, and instead serves as a criterion for assessing whether foresight has been institutionalised as a strategic coordination mechanism within the processes of policy formulation and implementation. The respective cases of the UK and the US offer contrasting approaches to this integration, shaped by their distinct models of governance: the former being centralised and advisory in orientation, the latter decentralised and operationally autonomous.

The United Kingdom: A Centralised, Policy-Advisory Model

The Foresight Programme, operating under the GO-Science, is designed as a strategic planning instrument for addressing the government's medium- to long-term policy challenges. To this end, each project establishes, at its inception, a High-Level Stakeholder Group comprising senior decision-makers from the relevant ministries and academic science advisers. This group typically includes the GCSA alongside the heads of the pertinent departments. For instance, in projects such as Flooding and Mental Capital, cabinet-level officials from the Defra and the DfE respectively were formal partners, thereby providing an official conduit between policy demand and scientific analysis.

However, the extent to which foresight is embedded into executional processes remains limited. While the Foresight Programme has, through the ROAMF framework, explicitly emphasised the importance of post-project impact assessment, policy follow-up, and indicator-based monitoring as part of a feedback loop, evidence from past initiatives suggests that such mechanisms have rarely been sustained in a systematic manner. The majority of project outcomes have been presented in the form of policy recommendations or policy options, with the implementation thereof being left to the discretion of individual departments. These outcomes are not structurally embedded within the formal policy planning cycle or budgetary systems, and thus often remain at the level of reference materials rather than operational inputs. This gap may be attributed to the institutional nature of GO-Science, which, while endowed with analytical and advisory authority, lacks formal jurisdiction over policy implementation, functioning instead as a non-executive entity.

Moreover, the administrative traditions of Whitehall tend to favour closed, top-down decision-making by senior civil servants, rather than bottom-up, practice-led planning. This institutional disposition means that the realisation of foresight outcomes is highly contingent upon the leadership of line ministries and the prevailing political receptivity. In other words, despite the sophisticated formal architecture of the UK's foresight system, its practical integration into the policy machinery of Whitehall remains structurally constrained.

The United States: A Practice-Oriented Foresight System Integrating Strategic Execution

In contrast to other national approaches, strategic foresight activities in the US are distinctly execution-oriented in design, functioning as practical instruments for mission execution and support across federal agencies. Each agency tailors its foresight functions to its unique policy objectives and strategic imperatives, often embedding them within specific operational cycles such as planning, response, or evaluation.

A quintessential example of this approach is the USCG Evergreen Programme, which serves as a mission-centric strategic training and planning foresight system specifically devised to anticipate and adapt to future maritime operational environments. Evergreen is organically integrated into the Coast Guard's broader mission delivery framework, encompassing a comprehensive process from the definition of long-term strategic challenges to the design of response scenarios, simulation-based leadership training, and the formulation of policy response options. Notably, annual simulations such as *Paratus Futurum* involve both senior leadership and operational personnel, thereby institutionalising a structured link between strategic thinking and organisational implementation capacity. The outcomes of the Evergreen Programme are formally reflected in a range of policy domains, including maritime security strategy, equipment acquisition planning, and organisational restructuring, thus positioning foresight as a standard mechanism within strategic execution (USCG, 2019).

Similarly, the Science and Technology Directorate of the DHS utilises foresight for the development of crisis response scenarios, the construction of novel threat detection matrices, and the prioritisation of response technologies. These efforts are embedded within a mission-oriented strategic support framework linked to technology investment roadmaps, illustrating how foresight outputs are integrated into comprehensive execution systems spanning policy formulation, technological planning, budget allocation, and performance evaluation.

NASA also exemplifies this institutional integration through its OTPS, which conducts scenario-based analyses of future space environments. The insights generated are explicitly incorporated into mission design, technology roadmap development, and public–private collaboration strategies (NASA, 2022). Beyond mere analytical output, this programme functions as an internal coordination and resource allocation infrastructure to guide strategic decision-making.

Furthermore, the USDA, particularly through its Forest Service research entities, applies horizon scanning and ecosystem-based risk assessments to inform policy prioritisation and budget strategies concerning long-term challenges such as climate change, forest resource management, and ecological resilience. This process moves beyond the provision of predictive intelligence, actively linking research and policy in a manner that enables the design of actionable strategic directions and their incorporation into operational governance (USDA, 2022).

Such cases underscore a distinctive tendency within the US towards integrating foresight as a core tool for both mission execution and support at the agency level. This reflects a pragmatic and institutionalised orientation that enhances the effectiveness of policy integration. In contrast, while the UK’s Foresight Programme is methodologically sophisticated and well-aligned with departmental policy objectives, it often falls short in institutionalising foresight at the implementation stage, leading to a disjunction between analysis and execution. The US model, though less centralised, demonstrates a high degree of foresight internalisation across the strategic cycle—from planning and resourcing to execution and evaluation—at the organisational level. This reveals that the efficacy of foresight lies less in analytical precision than in the degree to which it is embedded within systems of strategic action.

D. Evaluation Criteria

One of the critical indicators for determining the degree of institutionalisation of strategic foresight programmes lies in the existence and structural sophistication of their performance evaluation systems. The UK and the US, shaped by divergent political-administrative cultures and institutional design logics, exhibit markedly different approaches to the assessment of foresight initiatives, with distinct disparities in the clarity of evaluation, feedback mechanisms, and institutional embeddedness.

The United Kingdom: Sophisticated Analytical Structures with Limited Executional Feedback

Despite its longstanding institutional tradition and well-structured operational design, the UK Foresight Programme lacks formalised performance metrics or robust quantitative evaluation frameworks. Most projects culminate in the publication of a comprehensive final report, yet post-project evaluation reports produced within one year of project conclusion remain exceedingly rare. Consequently, performance evaluation in the UK context relies predominantly on qualitative criteria such as ‘agenda-setting impact’ or ‘contribution to strategic awareness’, whose interpretative significance tends to vary according to the subjective judgement of policymakers and the prevailing political context.

Particularly within the Whitehall system, policy decision-making is inclined to prioritise informal consultations and deliberations among senior civil servants over the empirical findings of analytical outputs. As such, the actual incorporation of foresight outcomes into policymaking remains difficult to objectively measure or systematically feed back into subsequent policy processes. This dynamic may be succinctly characterised as a system in which “analysis exists, yet executional feedback is deficient.”

An exception to this trend is the GST series produced by the MOD, which serves as a reference document for strategic dialogue with key security allies including NATO, the EU, and the Five Eyes community. In doing so, it accumulates indirect policy relevance and contributes to defence and security planning through comparative trend analyses (MOD, 2022).

The United States: Evaluation Frameworks Driven by Practical Objectives

In contrast, the US lacks a unified national-level framework for evaluating foresight activities. However, agency-specific evaluation mechanisms, tailored to functional mandates and operational imperatives, are relatively well developed. This reflects the pragmatic orientation of American foresight, which is primarily designed to support policy planning, crisis response, and organisational learning. Accordingly, individual agencies operate performance evaluation systems centred on practical efficacy and actionable feasibility aligned with their institutional objectives.

For instance, the USCG Evergreen programme employs simulation-based strategic training exercises aimed at enhancing the strategic response capacity of senior leaders and operational personnel. Performance indicators are focused on the effectiveness of decision support and the

diffusion of strategic thinking within the organisation (USCG, 2019). Similarly, agencies such as the OPM and various departments within the DHS assess foresight initiatives based on criteria such as their ‘usefulness’, alignment with organisational strategy, and contributions to human capital development (OPM, 2020; DHS S&T, 2021).

These practices underscore the American emphasis on endogenous evaluation criteria that prioritise institutional relevance and operational utility over standardised quantitative metrics. In doing so, U.S. foresight activities reinforce a culture of functional integration and applied impact rather than abstract measurement.

E. Talent Development Indicators

The sustainability and practical efficacy of strategic foresight ultimately hinge upon the internal professional capacities and human capital within an organisation. Particularly in policy environments characterised by heightened complexity and uncertainty, the institutionalisation and internalisation of foresight capabilities demand more than technical proficiency. Instead, they require a cultivated talent pool capable of analytical reasoning, strategic planning, and collaborative scenario construction. In this context, the UK and the US have adopted differing institutional approaches to capacity building in foresight, exhibiting structural divergences in both talent development indicators and systemic frameworks.

The United Kingdom: Project-Oriented Structure and Absence of an Integrated Talent Strategy

The UK’s strategic foresight system, as implemented through programmes under GO-Science and the MOD’s GST report, is fundamentally anchored in collaborative structures involving external experts and senior policymakers. While a basic infrastructure for foresight training is available through the Futures team for civil servants, and in the defence sector through Cranfield University’s wargaming and strategic analysis courses (Cranfield University, 2023), these efforts remain fragmented.

Notably, there is no institution-wide talent development strategy or performance indicator framework integrated across policy organisations. GO-Science has yet to establish a formalised competency framework or role-specific capability benchmarks. Nor does it systematically track or assess the learning outcomes of expert participants or the diffusion of foresight

competencies within government. Consequently, the foresight function remains disproportionately reliant on select experts or external advisory groups. Internal efforts to cultivate a sustained, long-term pool of foresight-skilled public officials remain underdeveloped.

The United States: Autonomous Practice-Based Training and Organisational Learning

By contrast, while the US lacks a centralised, government-wide foresight training framework, numerous federal agencies have autonomously devised practice-based competency development systems aligned with their strategic missions and institutional contexts. These systems typically do not treat foresight as a mere analytical toolkit but rather as a platform for enhancing strategic thinking and leadership within the organisation. Implicit, function-specific competency indicators are frequently embedded into such learning ecosystems.

A notable exemplar is the USCG Evergreen programme, widely regarded as a leading implementation-based foresight learning system. This initiative features a tiered training model involving senior leaders, mid-level managers, and junior staff, and employs a strategic simulation known as *Paratus Futurum* to cultivate competencies such as strategic thinking, complex risk identification and analysis, and collaborative decision-making. Similarly, the EPA has embedded foresight training rooted in systems thinking to equip practitioners with the skills needed to address complex challenges such as climate change, sustainability, and environmental regulation.

The EPA's FY 2022–2026 Strategic Plan explicitly integrates horizon scanning methodologies into policy design, underpinning training initiatives focused on future trend analysis, science-based policy development, and cross-departmental problem-solving. In this manner, the US has operationalised a pragmatic model of foresight-driven capacity building—grounded in institutional autonomy, implementation-oriented training systems, and the institutionalisation of internal learning cultures.

10.2.2 Strategic Outlooks Compared: MOD's GST and NIC's Global Trends

Since the early 21st century, the reconfiguration of the international order—amidst rapid technological, social, and environmental transformations—has led governments across the world to recognise the institutionalisation of strategic foresight as a critical policy imperative. With mounting geopolitical uncertainties, polycrises, and cascading systemic risks, the need for a structural understanding of future environments, and for policy design that integrates such foresight, has become increasingly pronounced. In response, major advanced nations have begun to publish long-term strategic outlook reports on a regular basis, establishing them as institutional cornerstones for national strategic planning and crisis response capability.

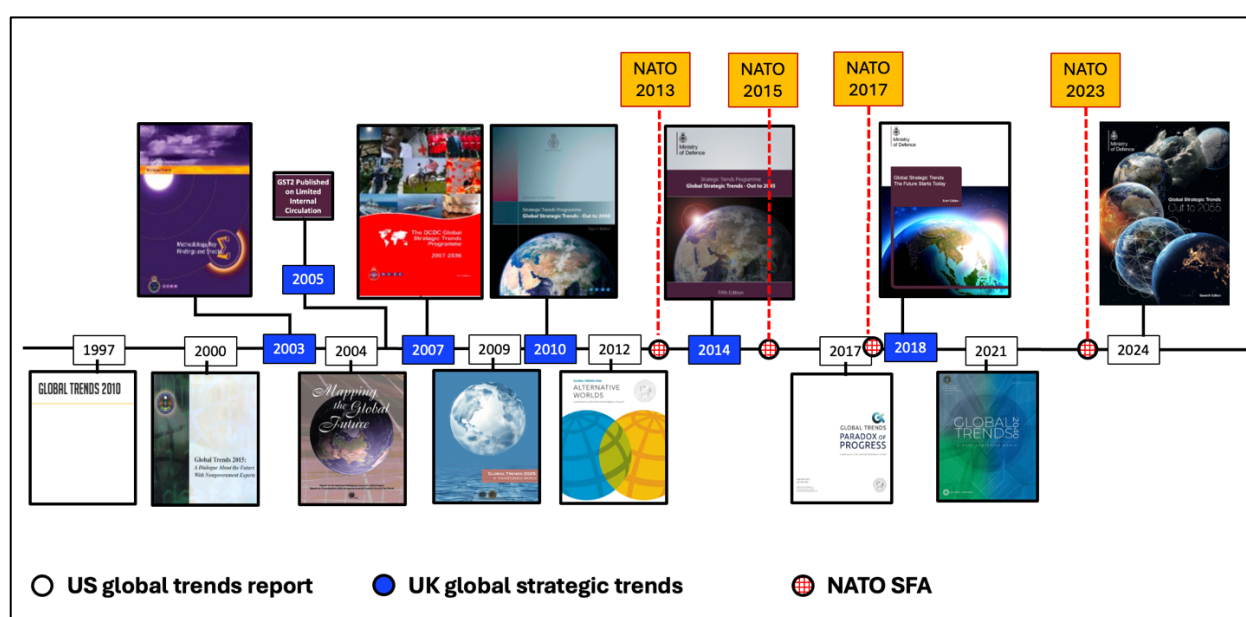
Among these strategic reports, GST, published by Defence Futures under the UK MOD, and the GT series, led by the US NIC, are widely regarded as emblematic public strategic documents that have evolved independently in line with their respective strategic environments and administrative traditions. Despite having followed divergent institutional trajectories—in terms of origins, organisational principles, and methods of knowledge production—both reports share a common methodological foundation: the integration of qualitative scenario planning with quantitative megatrend analysis, designed to provide a strategic baseline for long-term policy formulation.

Notably, both the UK's GST and the US NIC's GT reflect a shared recognition of the necessity for 'anticipating the future', while simultaneously embodying divergent strategic cultures and institutional configurations. This comparative analysis thus reveals more than mere procedural differences; it offers an instructive lens through which to examine how strategic foresight institutionalisation entails not simply the adoption of external models, but their adaptation and embedding within the specific policy and organisational context of each state.

Accordingly, this section aims to synthesise the preceding analyses through a multidimensional comparative assessment of the institutional evolution, strategic design, and operational mechanisms of the two reports. In doing so, it seeks to lay the conceptual groundwork for the proposal of an alternative strategic foresight mechanism, to be developed in the subsequent chapter (10.2).

A. Historical Comparison

The US' GT reports and the UK's GST emerged in a broadly similar temporal context, during the late 1990s and early 2000s (see Figure 21). Both initiatives were conceived as institutional responses to the growing structural uncertainty characterising the post-Cold War international order—an increasingly multipolar landscape marked by the proliferation of global risks. Against this backdrop, each government sought to institutionalise strategic foresight mechanisms capable of addressing the perceived unpredictability of long-term global developments.



[Figure 21] Chronology of the UK GST and the US GT. by Author

1. The Global Trends Series of the United States

The GT series was formally inaugurated in 1997 with the publication of Global Trends 2010, led by the NIC. Since then, the reports have been released quadrennially, aligning with the U.S. presidential election cycle. Traditionally, they are delivered to the President-elect during the interregnum period between Election Day and Inauguration Day, and are regarded as one of the most consequential strategic documents within the U.S. executive apparatus.

Each report adopts a forward-looking horizon of approximately 15 to 20 years and outlines a set of long-term global scenarios anchored in key structural drivers—namely geopolitics, economics, technology, and the environment. A distinctive feature of the GT series is its prohibition, by statute, from making direct policy recommendations. This restriction is designed to safeguard the NIC’s political neutrality and analytical independence, enabling the reports to serve as a reference baseline for the White House and the broader intelligence community in identifying prospective strategic threats and opportunities.

From a leadership perspective, each edition is typically curated under the editorial direction of the incumbent NIC Chair, supported by a distributed network of experts drawn from diverse institutional domains, including the CIA, DIA, the State Department’s Bureau of Intelligence and Research (INR), academia, and independent think tanks. For instance, *Global Trends 2015* was coordinated by Enid Schoettle and featured collaboration across various federal agencies’ strategic analysts. The initiative was notably expanded under the strategic direction of then-Director of Central Intelligence George Tenet, reflecting a broader inter-agency mandate.

The overarching vision of the series is to elucidate the "long-term implications of current changes" in a systematic and integrative manner, thereby equipping the President and senior policymakers with the analytical tools necessary to navigate an uncertain future. This mission has remained a consistent thread throughout subsequent editions of the GT reports. Notably, *Global Trends 2040* included contributions from distinguished academics such as Professor John Ikenberry (Princeton University), signalling a concerted effort to embed scholarly perspectives within the fabric of U.S. strategic thought.

2. The United Kingdom’s Global Strategic Trends (GST)

The GST series, first published in 2001, is a flagship public strategic foresight report produced. Since its inception, the series has served as a cornerstone document in articulating the medium- to long-term trajectories of British defence strategy and national security policy. Each edition of the GST adopts a long-range temporal horizon—typically spanning 20 to 30 years—and engages in a comprehensive analysis of multidimensional drivers of change, including geopolitics, demography, resources, technology, and climate change. Its principal aim lies in deriving strategic insights pertaining to future military threats, opportunities, and capability development trajectories. Rather than merely cataloguing potential threats, the GST endeavours to provide a structural understanding of the Future Operating Environment (FOE),

thereby enabling defence planners to pre-emptively design force structures, doctrinal developments, and security diplomacy strategies in alignment with anticipated global shifts.

The governance of GST rests primarily within the internal command architecture of the Defence Futures. While civilian academia and industry experts are occasionally engaged in advisory or limited research capacities, the process remains largely centralised and semi-closed in its configuration. In contrast to the US' GT reports—produced through an open, intelligence community-led collaborative model—the UK's GST maintains a defence-centric and selectively permeable structure. This enables a tighter alignment with strategic planning and policy implementation, albeit at the potential cost of reduced openness to external innovation and interdisciplinary scholarly input.

The overarching vision of the GST is to “anticipate multidimensional future security environments and make a substantive contribution to the development of defence strategy and doctrine.” The findings and insights of the report are actively integrated into the MOD's operational planning, threat assessment, and resource allocation processes, thus serving as an instrumental reference throughout the strategic planning cycle.

3. Publication Cycles

To elucidate the publication cadence and structural characteristics of the two reports, Table 12 below offers a visual representation of the timelines and intervals at which the US' GT and the UK's GST have been released.

The GT reports, produced by the U.S. NIC, have been issued approximately every four years since the inaugural edition in 1997. This cycle aligns closely with the U.S. presidential election cycle, underscoring its strategic utility for incoming administrations. Notable editions include *Global Trends 2010* (1997), *Global Trends 2015* (2000), *Global Trends 2020* (2004), *Global Trends 2025* (2008), *Global Trends 2030* (2012), *Global Trends 2035* (2017), and *Global Trends 2040* (2021). The most recent volume, *Global Trends 2040*, was originally scheduled for release at the end of 2020 but was delayed until March 2021 due to the global disruption caused by the COVID-19 pandemic. This delay serves as a salient example of how global crises can materially impact not only the timing of foresight exercises but also their analytical content and prioritisation.

Country	Report Title	Year of Publication	Approx. Interval	Remarks
US	<i>GT 2010</i>	1997	–	First edition
	<i>GT 2015</i>	2000	3 years	Aligned with presidential election cycle
	<i>GT 2020</i>	2004	4 years	–
	<i>GT 2025</i>	2008	4 years	–
	<i>GT 2030</i>	2012	4 years	–
	<i>GT 2035</i>	2017	5 years	Slightly extended cycle
	<i>GT 2040</i>	2021	4 years	Publication delayed due to COVID-19
UK	<i>GST 1</i>	2003	–	First edition
	<i>GST 2</i>	2005	2 years	Early phase, short cycle
	<i>GST 3</i>	2007	2 years	–
	<i>GST 4</i>	2010	3 years	Transition to regularised cycle
	<i>GST 5</i>	2014	4 years	–
	<i>GST 6</i>	2018	4 years	–
	<i>GST 7</i>	2024	6 years	Delayed due to COVID-19

[Table 12] Timeline of the US GT and the UK GST Series. by Author

By contrast, the UK's GST reports have been published under the leadership of the Defence Concepts and Doctrine Centre (DCDC), a division of the MOD, since the first edition in 2003. The series has followed a more variable interval of approximately three to five years, with major editions released in 2005 (2nd edition), 2007 (3rd), 2010 (4th), 2014 (5th), 2018 (6th), and most recently in 2024 (7th edition), the latter having been delayed from its initially anticipated timeline. The GST reports serve as a foundational input to the UK's Future

Strategic Context for Defence, while also informing the National Security Strategy (NSS) and the Strategic Defence and Security Review (SDSR). Furthermore, they operate as a strategic communication platform with allied and partner nations.

In terms of publication regularity, the U.S. GT series is institutionalised as a fixed-cycle strategic document, tightly coupled with political transitions, particularly presidential elections. In contrast, the UK's GST series reflects a more adaptive approach, with report timings adjusted in accordance with the evolving demands of defence policy and doctrine development. Consequently, the U.S. reports are predominantly oriented towards identifying strategic risks and providing long-range scenario frameworks for senior policymakers, whereas the UK reports are geared towards informing defence strategy formulation and capability development from an operational perspective. This distinction illustrates how the ostensibly similar genre of 'foresight reports' has been institutionalised in different ways to suit the political, administrative, and policy rhythms of each country. It thereby offers a compelling comparative case of strategic foresight adapted to national governance ecosystems.

4. Programmatic Approaches

The US' GT series by the NIC and the UK's GST reports produced by the Defence Futures have emerged from distinct institutional contexts and strategic imperatives. Nevertheless, both share the overarching aim of supporting national strategy formulation through the systematic analysis of long-term structural transformations. Over time, however, each programme has evolved along divergent trajectories, exhibiting clear differences in trend identification methodologies, analytical structures, and operational scope.

The US' GT reports, beginning with *Global Trends 2010* in 1997, have been published in general alignment with the four-year presidential election cycle. The early iterations focused primarily on the structural impacts of globalisation and technological advancement on the international order. Notably, *Global Trends 2015*, released in 2000, foresaw the potential rise of terrorism and non-state actors, offering a prescient warning regarding asymmetric threats well before the events of 9/11 (NIC, 2000). The 2004 *Global Trends 2020* report marked a pivotal shift by incorporating energy security and climate change into the strategic environment, thereby embedding environmental and resource-related risks within a national security framework (NIC, 2004).

Subsequent editions, such as *Global Trends 2025* (2008), concentrated on the possible multipolarisation of the international order, particularly with the rise of China and India. *Global Trends 2030* (2012) expanded its focus to include structural socio-economic changes such as urbanisation, middle-class expansion, and technological innovation, highlighting their long-term implications for competitiveness and security (NIC, 2012). From this point, the reports began to systematically incorporate non-traditional threats, such as the interaction between technology and governance and the rise of the digital economy.

The 2017 edition, *Global Trends 2035*, placed renewed emphasis on internal political instability, the diffusion of power, and social fragmentation as key strategic risks, thus drawing attention to intrastate dynamics as integral components of national security (NIC, 2017). The most recent report, *Global Trends 2040*, published in 2021, organised its analysis around four structural drivers—demography, environment, technology, and economics—and developed a series of alternative future scenarios. Reflecting the shock of the COVID-19 pandemic, this edition introduced new analytical variables, including systemic resilience, digital inequality, and the fragility of global cooperation, thereby representing a substantive inflection point in the evolution of the series (NIC, 2021).

By contrast, the UK's GST was conceived from its inception as a tool for direct integration into military strategy, under the auspices of the MOD's strategic planning arm—the DCDC, now subsumed under Defence Futures. The inaugural edition, published in 2003, outlined responses to emerging post-Cold War security threats such as non-state actors and the proliferation of disruptive technologies.

The second edition (2005) explored the implications of globalisation and the diffusion of digital technologies for military operations, emphasising the need for strategic adaptation to a rapidly evolving technological landscape. The third edition (2007) addressed structural changes such as resource competition, climate change, and population displacement, offering a comprehensive examination of how these global forces could manifest as military-security threats and introducing the concept of complex threats.

The 2010 edition, GST 4, illuminated the rise of cyberspace, asymmetric capabilities, and hybrid warfare, thereby highlighting the imperative of preparing for cross-domain conflict (DCDC, 2010). GST 5, published in 2014, focused on the strategic implications of next-generation technologies, including artificial intelligence, automation, and autonomous weapon systems, setting priorities for military adaptation to future combat environments (DCDC, 2014).

In 2018, GST 6 revised core concepts such as resilience and adaptability in response to increasing strategic uncertainty. It also formally adopted the notion of integrated operations across multiple domains (DCDC, 2018). Most recently, the seventh edition (2024) addressed the growing complexity of multi-domain operations and the resurgence of geopolitical volatility. It introduced the concept of "Shared Space" to characterise the convergence of physical and non-physical theatres of conflict—where competition, coexistence, and interdependence simultaneously shape strategic realities (UK MOD, 2024).

Thus, while the Global Trends series continues to emphasise governance, technology, demography, and environmental change as long-term macrostructural forces driving alternative strategic futures (NIC, 2021), it also exerts indirect influence over military planning through integration into wider interagency strategic documents (NIC, 2017; 2021).

In contrast, the UK's ST has maintained a threat-based scenario logic closely aligned with military strategic development since its inception (DCDC, 2003; 2010). In recent years, it has moved to expand its strategic conceptual repertoire in light of technological convergence and operational complexity. The introduction of "Shared Space" exemplifies this evolution, representing an attempt to translate complexity science into the lexicon of strategic policy design—a distinctive feature of the UK's approach to foresight (UK MOD, 2024).

Importantly, both reports are the result of collaborative efforts involving not only governmental experts but also scholars, industry leaders, and international allies. Despite their national origins, they are publicly available and intentionally designed to contribute to international strategic dialogue and the dissemination of strategic insight, positioning them as open-access knowledge assets with global policy relevance.

B. Mission Implementation and Support

The strategic foresight reports of the US and the UK have each evolved distinct operational and managerial frameworks, shaped by the respective national security architectures, institutional cultures, and policy demands. These differences manifest across the planning structures, leadership configurations, collaborative networks, and dissemination practices that underpin each report.

In terms of institutional leadership, the UK's GST is currently overseen by Defence Futures, a body under the MOD that emerged from the strategic planning functions of the former Development, Concepts and Doctrine Centre (DCDC). While Defence Futures coordinates the overall planning and execution of the report primarily through civil and military professionals, it has institutionalised collaboration with external expert bodies to ensure analytical rigour and future-oriented relevance. Notably, partnerships with the Defence Academy of the UK and Cranfield University support the co-development of scenario design and analytical frameworks. Research outputs from institutions such as the Defence Science and Technology Laboratory (DSTL) and the Royal United Services Institute (RUSI), as well as inputs from industry experts, academic theorists, and allied security advisors, are incorporated through advisory roles and joint workshops. Thus, rather than functioning as a closed military document, GST is increasingly positioned as an integrated strategic platform that leverages a multi-layered network of policymakers, academics, industry stakeholders, and allied partners.

In the US, the GT reports are spearheaded by the NIC, with the inaugural edition—Global Trends 2010—published in 1997 under the leadership of Barry Lowenkron, then Director of the Council's Analytic Group, and Richard Cooper, then Chair of the NIC. Since then, each report has been coordinated by a National Intelligence Officer (NIO) within the NIC, who oversees a comprehensive research process involving the CIA, DIA, State Department's Bureau of Intelligence and Research (INR), private think tanks, international research institutes, and academic experts. For instance, Global Trends 2015 was shaped in part by Enid Schoettle, a former NIO for global and multilateral issues (1993–1996), while Global Trends 2020 was led by Mathew Burrows as Director of Analysis and Production at NIC. The US, too, has developed a hybrid operational model wherein internal leadership is augmented by extensive external expertise.

The two countries also differ markedly in their research methodologies. The UK's GST prioritises alignment with military doctrine and operational planning, with scenario design and analysis conducted by teams of strategic experts using war gaming, simulation exercises, and domain-based threat modelling. This reflects a tradition of military-led strategic analysis aimed at practical policy application. Conversely, the US GT reports are led by NIC analysts and NIOs, who employ a combination of qualitative scenario construction, quantitative forecasting tools, and in-depth engagement with international experts. These processes are conducted under principles of political neutrality and analytical independence that characterise the intelligence community.

The modes of publication and dissemination further underscore these distinctions. In the UK, GST reports have historically undergone internal review within the MOD and have often been distributed on a restricted basis, reflecting considerations of military strategy and operational security. In contrast, the US GT series is presented to the President's transition team and the NSC, and is subsequently released in full to the public. It thereby serves both as a strategic communication tool and as a reference point for international policy discourse. Nevertheless, both countries maintain a clear delineation between publicly released versions and classified internal reports, particularly concerning sensitive military and security information.

Finally, both countries exhibit notable commonalities in the configuration of their collaborative networks. Each maintains a broad constellation of internal defence and intelligence experts in concert with academic institutions, industrial stakeholders, and strategic communities. They also share structured engagement with allied intelligence and policy networks, such as the Five Eyes, NATO, and the European Strategy and Policy Analysis System (ESPAS). These cooperative arrangements aim to enhance the diversity of strategic perspectives and ensure the coherence of scenario planning. Increasingly, such partnerships facilitate alignment in the perception of long-term strategic threats and support integrated policy development across international foresight communities. This underscores the growing salience of global strategic networks in the co-production of future-oriented policy frameworks.

D. Evaluation Criteria

The strategic foresight reports of the US and the UK demonstrate structural differences in their performance evaluation criteria, reflecting their distinct institutional foundations and intended applications. The influence of such reports is not merely determined by their publication, but rather by a complex set of indicators, including their integration into strategic planning frameworks, participation in global strategic discourse, and capacity to anticipate future risks.

The UK's GST reports serve primarily as practical forecasting tools in support of military strategic planning. Notably, the reports do not articulate explicit performance indicators as part of their formal framework. Nevertheless, certain recurring themes—such as organisational adaptability, flexibility in policy design (responsiveness), and responsiveness to multi-domain operations (MDO)—function as implicit evaluative criteria within operational contexts. For instance, GST 6 (UK MOD, 2018) identified "preparedness and adaptability" as core principles, underscoring the need for defence institutions to enhance future-readiness and strategic

flexibility. Although GST 7 (UK MOD, 2024) does not explicitly employ terms such as “strategic resilience” or “operational agility,” it conveys a parallel message through its emphasis on “preparedness and agility to meet alternative futures.” This phrasing highlights the imperative of equipping defence structures with the capacity to navigate uncertainty and complexity in future security environments. The strategic orientation of GST 7 reflects a deliberate design to engage with MDO-centric and interdependent operational domains, signalling an overarching commitment to institutional agility.

Moreover, the extent to which GST reports are embedded within defence doctrine and policymaking processes constitutes a critical dimension of their performance assessment. The strategic scenarios and threat analyses developed by Defence Futures are regularly incorporated into official documents such as the Strategic Defence and Security Review (SDSR) and Joint Doctrine Publication (JDP), thus positioning GST as a substantive contributor to force development and policy formulation. In addition, select GST outputs have served as reference materials for NATO’s Strategic Foresight Analysis (SFA), thereby supporting strategic coherence within allied planning frameworks (NATO, 2017). These linkages underscore the reports’ relevance beyond the national domain, reinforcing their role in fostering coordinated responses to emerging global security challenges.

The GT series, spearheaded by the U.S. NIC, functions as an analysis-driven strategic foresight framework. Its performance and effectiveness are broadly assessed according to three principal criteria.

First, the degree of policy relevance and uptake constitutes a key evaluative benchmark. Each GT report is formally delivered during the presidential transition process and serves as a referential framework for senior strategic bodies such as the NSC, the Department of State, and the US Agency for International Development (USAID) when formulating long-term policy orientations. For instance, the preface to *Global Trends 2040* explicitly states: “Global Trends is designed to provide an analytic framework for policymakers...”—a declaration that situates the report not merely as a predictive document but as an instrument contributing to the construction of strategic discourse. While premised upon the analytical independence and policy neutrality of the intelligence community, the report nonetheless exerts a discernible influence on the setting of strategic priorities within the U.S. policy apparatus.

Second, the strategic early warning capability of the report represents a critical evaluative dimension. *Global Trends 2040* is titled “A More Contested World”, thereby signalling a

projected structural transformation in global order over the next two decades, characterised by intensifying fragmentation and geopolitical competition. The report undertakes a comprehensive analysis of the interplay among key drivers—demographic transitions, climate and resource insecurity, intensifying technological rivalries, and the erosion of international governance. These dynamics are conceptualised as generating a complex structure of contestation across societies, states, and the global system. Although terms such as "U.S.-China strategic competition" or "global supply chain instability" are not explicitly stated, the underlying scenarios and their constituent variables are closely aligned with these contemporary challenges. In this respect, the report serves as a conceptual foundation for long-range structural risk awareness and offers a complexity-informed strategic framework that extends beyond traditional threat-based early warning models.

Third, the degree of international influence offers an additional evaluative perspective. The GT reports have been referenced and shared within a wide range of international strategic platforms and policy networks, including the ESPAS, NATO's Strategic Foresight Analysis, the World Economic Forum (WEF), and the United Nations Development Programme (UNDP). Certain contributors to the GT series have also been invited to present at multilateral strategic forums and workshops, such as the Davos Forum in Switzerland or the IISS Dialogue in Singapore. However, these engagements are generally characterised by indirect utilisation rather than systematic citation of the reports themselves. As such, it is more accurate to interpret the GT series as a tool of public strategic communication, through which the US' strategic outlook on the future is disseminated across the global policy discourse.

E. Talent Development

To date, neither the UK's GST nor the US' GT series has institutionalised or operationalised talent development outcomes in an explicit or formally measurable manner within their respective strategic foresight frameworks. While references to training programmes, external collaborations, and scenario-based exercises appear intermittently across official documents and operational practices, there remains a notable absence of a systematic and evaluable mechanism for talent development as an integral component of strategic foresight systems.

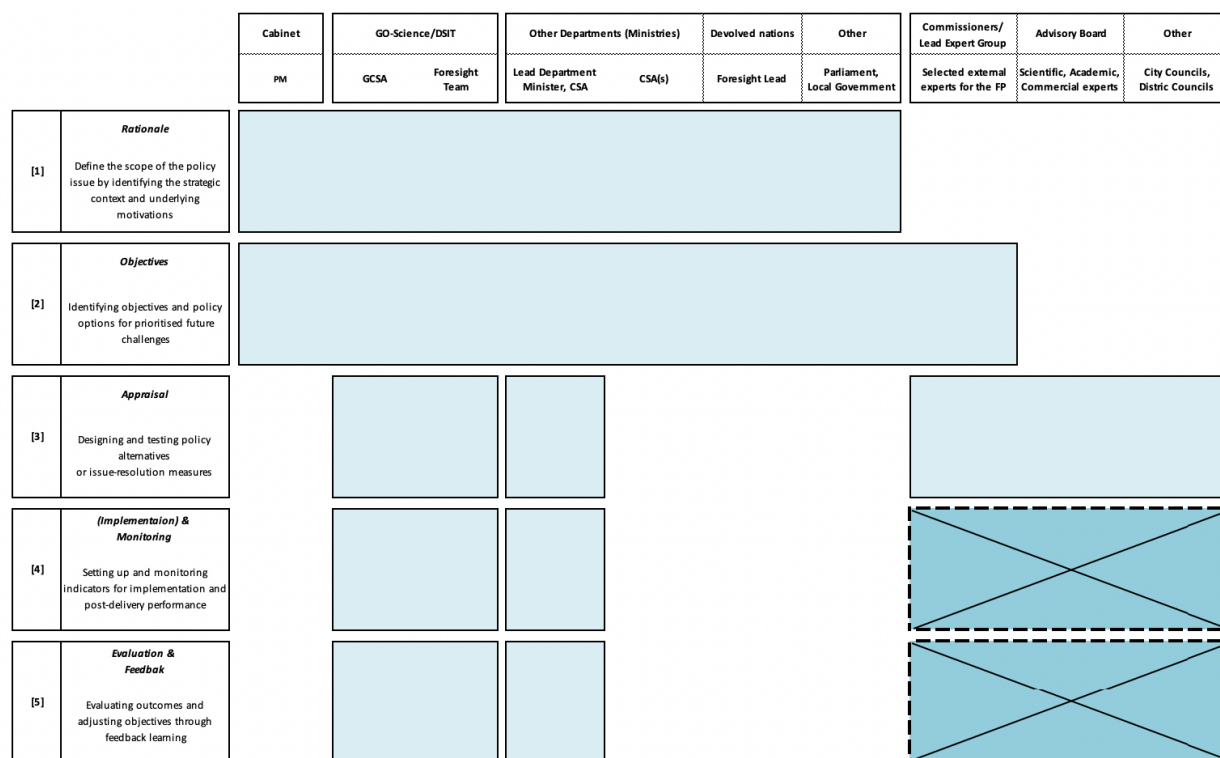
In this context, the present study proposes an ideal structure for future-oriented talent development metrics, drawing upon insights from strategic management theory and with the aim of enhancing institutional foresight capacities.

In the UK case, GST leverages short-term courses in wargaming and operational modelling offered by Cranfield University as a core educational infrastructure for cultivating strategic analysts (Cranfield University, 2023; Cranfield Case Study, 2025). This educational approach positions GST not merely as a foresight report but as a functional laboratory for nurturing analysts and policy practitioners equipped to engage in long-range strategic design. Moreover, collaborations with institutions such as the Defence Science and Technology Laboratory (Dstl) and the Royal United Services Institute (RUSI) underpin iterative processes of strategic training and force adaptability assessment. These partnerships serve to embed agility and operational relevance throughout the broader strategic planning apparatus (MOD, 2021; Cranfield Case Study, 2025).

Conversely, the GT series produced under the aegis of the NIC in the US incorporates concepts such as ‘alternative futures’, ‘megatrends’, and ‘game-changers’ as tools for strategic analysis education (NIC, 2012; NIC, 2021). These conceptual frameworks facilitate the training of policy design capabilities grounded in complexity theory, and also foster the diffusion of strategic thinking through sustained engagement with academia and think tanks, thereby contributing to the cultivation of a broader epistemic ecosystem (Burrows, 2023). Notably, the GT series’ multi-scenario analysis model operates as a dual instrument—simultaneously enhancing strategic imagination and preparing adaptive responses—and is partially integrated into the internal training protocols of the intelligence community.

Ultimately, both systems would benefit from evolving beyond the production of policy-oriented documents to embed strategic foresight as a transferable competency within institutional talent. The explicit development and operationalisation of talent development metrics is thus emerging as a critical imperative for embedding foresight capacity at the organisational level.

10.3 Alternative Mechanisms



[Figure 22] Abstract of a Traditional UK Futures Framework. by Author

The mechanism of the UK's national foresight programme, adapted from the ROAMF framework, may be summarised as follows (Figure 22).

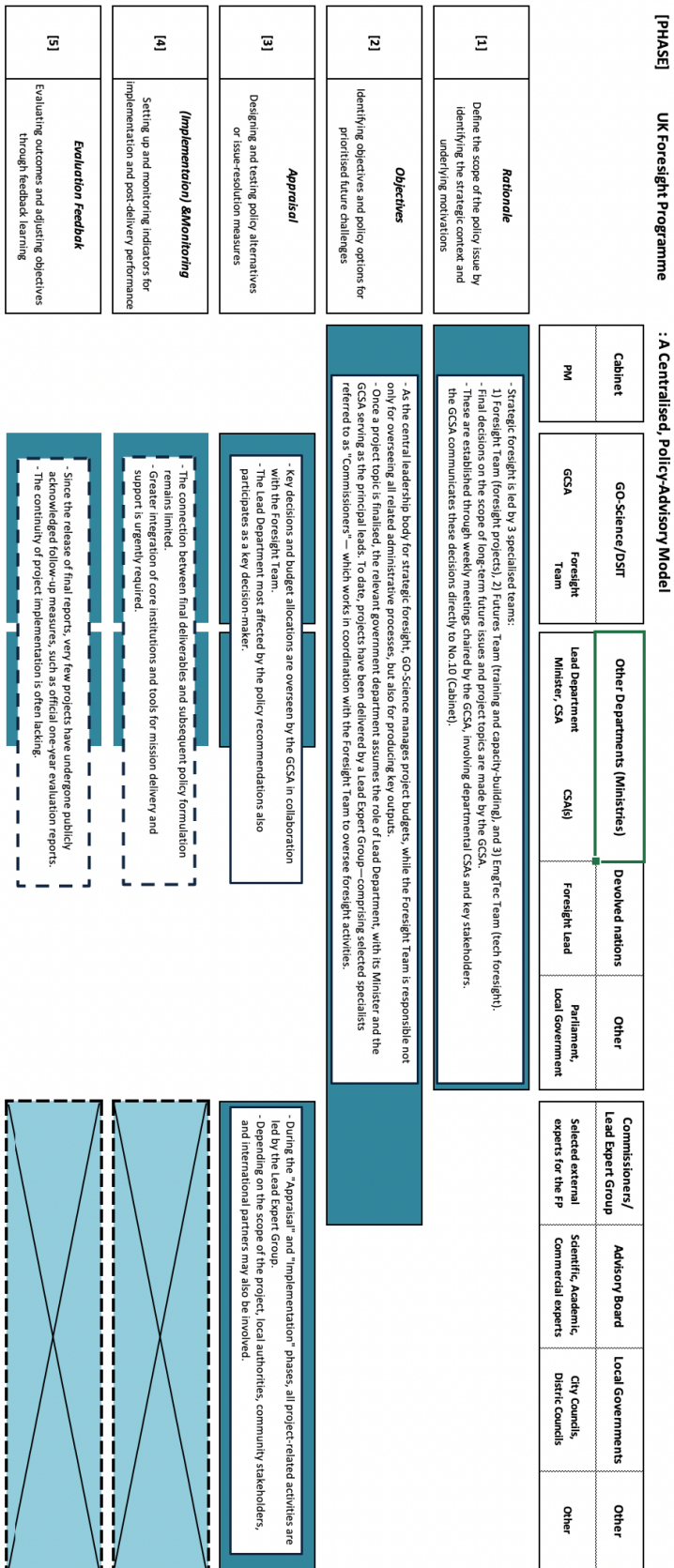
First, in the Rationale phase, the identification and determination of long-term future issues and project topics constitute a core procedure. The UK Government's strategic foresight activities are primarily led by three specialised teams: the Foresight Team, which oversees foresight projects; the Futures Team, focusing on training and capacity-building; and the EmgTec Team, responsible for technological foresight. The operations of these teams are coordinated through weekly meetings chaired by the GCSA, with participation from departmental Chief Scientific Advisers and other key stakeholders. The GCSA renders final decisions regarding the scope and prioritisation of long-term issues, and these decisions are formally communicated to the Cabinet.

Second, in the Objectives phase, the GO-Science, as the central administrative body for strategic foresight, assumes responsibility for managing project budgets. Simultaneously, the Foresight Team plays a central role in managing all administrative processes and delivering the primary outputs. Once a project topic has been formalised, the corresponding government department is designated as the Lead Department, with its Minister and the GCSA acting as the principal leads. To date, foresight projects have been implemented through a Lead Expert Group—comprising selected specialists referred to as “Commissioners”—which collaborates closely with the Foresight Team to supervise foresight activities.

Third, the Appraisal phase involves the oversight of key decisions and budget allocations by the GCSA, in collaboration with the Foresight Team. The Lead Department—particularly if it is significantly impacted by the policy recommendations—also functions as a principal decision-making entity. During both the Appraisal and Implementation phases, the Lead Expert Group assumes responsibility for all project-related activities. Depending on the nature and scope of the project, participation may also extend to local authorities, community stakeholders, and international partners. This multi-layered collaborative approach serves as a crucial mechanism for enhancing the feasibility and public legitimacy of policy proposals.

Fourth, in the Implementation & Monitoring phase, there exists a notable disconnection between the final deliverables of foresight projects and subsequent policy formulation. This indicates a structural discontinuity in the translation of foresight outcomes into actionable governmental strategies. As such, there is an urgent need for more coherent and integrated linkages among the institutions and instruments tasked with mission delivery and policy support. Such integration is deemed essential for ensuring both the practical effectiveness and the long-term sustainability of foresight initiatives.

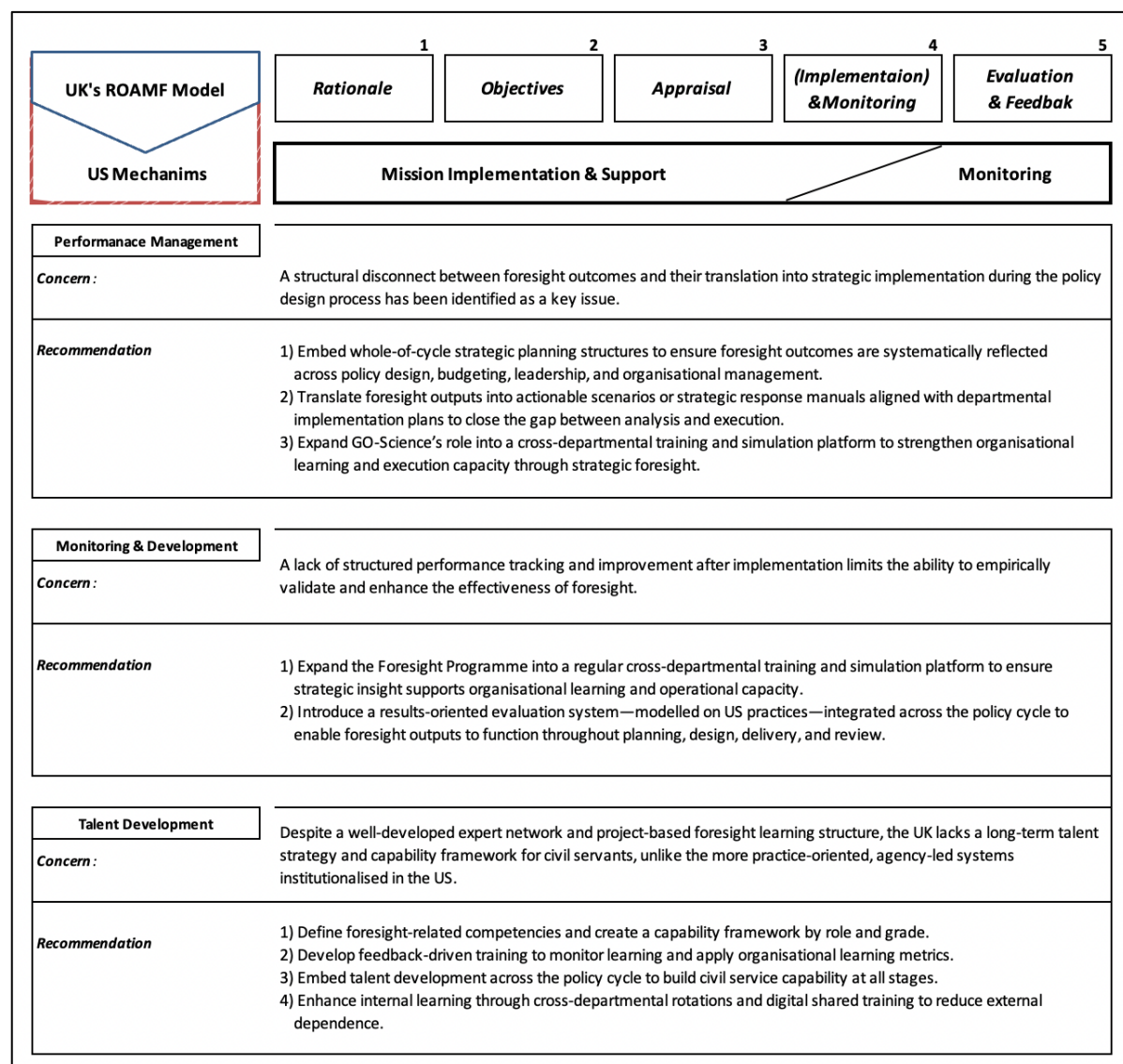
Fifth, also within the Implementation & Monitoring phase, follow-up measures such as publicly available one-year evaluation reports have been exceedingly rare. This lack of formalised continuity reflects a broader systemic limitation in ensuring sustained implementation of foresight projects. Consequently, many initiatives have remained isolated analytical exercises, failing to evolve into tangible, long-term policy outcomes. This discontinuity underscores the need for institutional reforms that would enhance the policy relevance and credibility of strategic foresight within the UK Government.



[Figure 22 -2] Abstract of a Traditional UK Futures Framework (Large version). by Author

10.3.1 Newly Refined Model A: Adopting a Practice-Oriented Foresight Mechanism

In light of these observations, this study proposes a revised mechanism—Newly Refined Adopting a US’s Practice-Oriented Foresight System—designed to address the limitations of the current UK model by drawing upon the more implementation-focused practices observed in the US. Specifically, the new mechanism seeks to strengthen the existing framework through the following three pillars: (1) Performance Management, aimed at reinforcing accountability and establishing a robust evaluation system for policy implementation; (2) Monitoring & Development, to support ongoing feedback loops and improve executional capacity; and (3) Talent Development, which focuses on embedding future-oriented capabilities within institutions and cultivating expert networks.



[Figure 23] Newly Refined Model A. by Author

Figure 23 provides a conceptual illustration of the operational mechanism of the ‘Newly Refined Model A’, deployed based on the execution-oriented foresight system of the US. Based on this model, the following recommendations are proposed for enhancing the implementation capacity of the UK’s foresight system.

Recommendations for Performance Management

From the perspective of performance management—that is, the implementation and support of foresight projects—the UK has scope to incorporate supplementary mechanisms drawn from the US execution-oriented model, including embedded implementation strategies, budget integration, and strategic training frameworks.

First, it is necessary to internalise a full-cycle strategic planning structure that connects the initial design of foresight projects with their implementation stages. Models such as the USCG’s Evergreen programme and NASA’s Office of Technology Policy and Strategy (OTPS) exemplify systems in which long-term foresight outputs are systematically reflected not only in policy design, but also in budget planning, leadership development, and organisational operations. These domains remain relatively underemphasised in the UK context.

Second, there is a need for strategies that bridge the gap between analysis and execution. Rather than allowing foresight outputs to remain at the level of abstract ‘policy options’, they should be translated into actionable implementation scenarios or strategic response manuals aligned with departmental plans. As demonstrated by the US DHS and the Forest Service within the USDA, such scenario planning serves as an effective intermediary linking research and implementation.

Third, the role of GO-Science should be expanded towards a more implementation-oriented learning system. Beyond its current advisory capacity, GO-Science could develop a regular training framework and collaborative simulation platform in conjunction with relevant departments. This would ensure that strategic insight contributes directly to organisational learning and improved implementation capabilities. Such an approach would align with the Paratus Futurum programme within the US Evergreen framework, which integrates foresight and execution.

By incorporating these enhancements, the UK's foresight system can retain its strengths in sophisticated analysis and policy design, while reinforcing an execution-focused strategic cycle. Ultimately, this would improve the efficacy of long-term national policy planning.

Recommendations for Monitoring and Institutional Feedback System

The UK Foresight Programme is equipped with a sophisticated analytical and operational structure; however, its effectiveness in translating foresight outcomes into policy implementation and institutional feedback remains limited. In particular, there exists a structural deficiency in the absence of common evaluation metrics and procedures to systematically assess policy uptake or track implementation outcomes following the conclusion of foresight projects. Most outputs are confined to 'policy recommendations', with the extent of adoption left to the discretion of individual departments. As a result, there is a risk that the programme's analytical and technical excellence may not effectively transfer into strategic execution or organisational learning.

To address these shortcomings, the UK could benefit from drawing upon the US experience, by incorporating the following enhancements:

- An embedded evaluation framework linked to implementation activities at the departmental level
- A performance-based feedback mechanism
- An organisational training system to disseminate strategic thinking

These improvements aim to reinforce a virtuous cycle encompassing analysis, design, implementation, and evaluation. Such a shift would enable foresight outputs to move beyond advisory roles and function as integral components in all phases of policymaking — from initial formulation to post-implementation assessment. Accordingly, the future trajectory of the UK Foresight Programme should involve the articulation of clear performance goals and evaluation indicators from the planning stage. Furthermore, a sustainable monitoring and feedback system should be maintained after project completion to bridge the gap between analysis, policy, and execution. This would serve to enhance the overall efficacy of strategic foresight and solidify its role as a core instrument of evidence-based governance.

Recommendations for Talent Development

The UK's Foresight programme has received favourable evaluations for its utilisation of external expert networks and its project-based, thematic learning structure. However, it continues to exhibit shortcomings in terms of long-term talent strategies and a systematic competency evaluation framework for internal civil servants. By contrast, the US has institutionalised a more practice-oriented training system and internal learning culture, grounded in an autonomous, agency-centred structure, thereby differentiating itself in both policy execution and capacity-building.

Accordingly, it is imperative for the UK to design a talent management strategy that is closely integrated with its strategic Foresight system. This strategy should be guided by the following components:

First, the introduction of a comprehensive competency framework is essential. This framework should clearly define key competencies related to Foresight activities—such as policy analysis, scenario planning, and collaborative design—and systematically establish role- and grade-specific standards.

Second, a feedback-oriented educational mechanism must be developed. Such a mechanism should facilitate the ongoing monitoring of participants' learning outcomes and competency development, while enabling the establishment of long-term organisational learning indicators that support effective performance management.

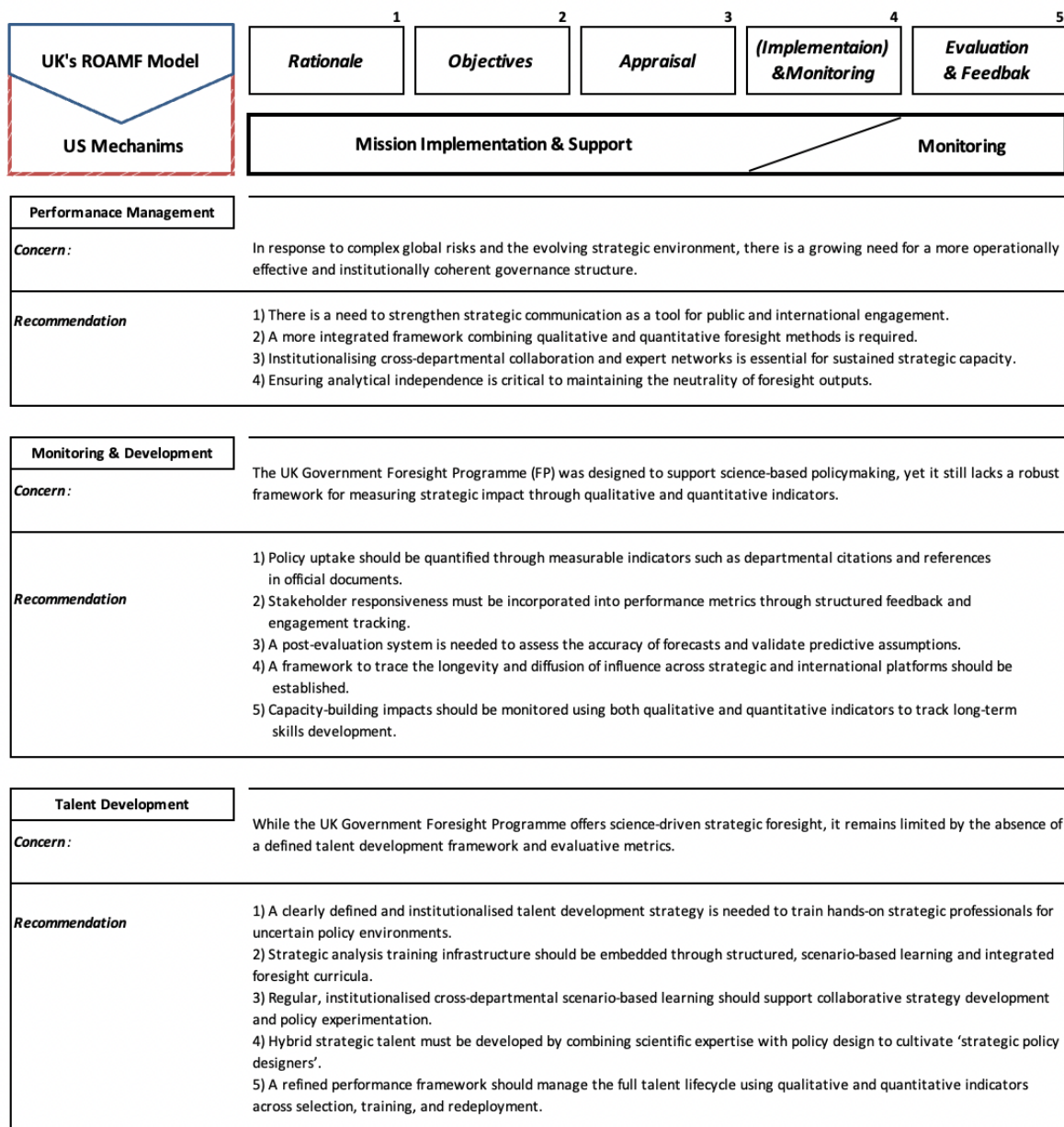
Third, there is a need to institutionalise an integrated talent development structure across the full policy lifecycle. By encouraging practitioners to engage directly in all phases of Foresight—from planning and analysis to design and evaluation—it becomes possible to cultivate and internalise the practical competencies required at each stage.

Fourth, enhanced inter-organisational exchange and a robust digital learning infrastructure should be prioritised. Establishing rotational learning schemes across departments and creating a shared digital education platform would reduce dependency on external consultancy and foster a more autonomous internal learning ecosystem.

Through the construction of such a strategic talent management system, the UK's Foresight programme can evolve into a more execution-oriented policy design system—one in which analysis, implementation, and learning are cohesively integrated.

10.3.2 Newly Refined Model B: A Science-Based Strategic Foresight Execution

Through a comparative analysis of the UK MOD's *Defence Futures* GST and the US NIC's GT, this study provides an in-depth examination of the strategic foresight governance and operational frameworks of both nations—focusing on management systems, performance evaluation, and talent development structures. Based on these findings, the study proposes a *Newly Refined Model B* as a novel framework for implementing strategic foresight, structured around the same three core pillars. This model is particularly situated within the context of science and technology-driven, evidence-based policy design.



[Figure 24] Newly Refined Model B. by Author

Recommendations for Performance Management

The UK's Foresight programme has traditionally offered strategic policy direction through a science and technology-based analytical framework. However, in light of increasing global complexity and evolving strategic risk environments, there is a growing need for an enhanced operational structure that is more effective and coherent. In this regard, the GT reports from the US and the UK MOD's GST suggest the following four directions for improving Foresight programme:

First, there is a need to strengthen the function of strategic communication. The US GT report is published not only for policymakers but also for the general public and international partners. As such, it plays a role in shaping strategic narratives and serving as a tool for diplomatic messaging. In contrast, the Foresight programme remains primarily a resource for internal policy practitioners. It is therefore recommended that a public-facing communication strategy be developed for selected analytical outputs.

Second, the establishment of an integrated analytical framework combining both qualitative and quantitative approaches is essential. Both the GT and GST reports enhance the credibility and objectivity of strategic assessments by employing scenario-based qualitative analysis alongside quantitative indicators and predictive models. While the Foresight programme is strong in qualitative foresight rooted in science and technology, its linkage to quantitative modelling for policy scenario design remains insufficient and requires strengthening.

Third, institutionalised collaboration across multiple departments and with expert networks should be pursued. The GT and GST frameworks benefit from sustained collaboration with academia, industry, and research institutions, thereby reinforcing analytical capacity. Conversely, the Foresight programme tends to rely on ad hoc, project-based expert engagement. A formalised governance structure is therefore needed to enable continuous collaboration among policymakers, scientists, and strategists.

Fourth, it is critical to ensure the analytical independence required for policy neutrality. The US GT maintains political neutrality by law, being prohibited from making direct policy recommendations, thereby safeguarding the analytical objectivity and institutional independence of intelligence bodies. In contrast, the Foresight programme is coordinated by the within the Cabinet Office, and thus more susceptible to political influence. Mechanisms to institutionalise and protect analytical autonomy should be established.

Recommendations for Evaluation and Monitoring

The UK's Foresight programme, initially designed to support evidence-based policymaking, still lacks a comprehensive system of performance indicators capable of quantitatively and qualitatively assessing the strategic effectiveness of its reports. In contrast, the US' GT and the UK MOD's GST serve more focused purposes—informing intelligence analysis and military

planning—and have progressively developed structures to indirectly evaluate the impact of their foresight outputs.

Accordingly, the Foresight programme should consider refining its performance indicator system in the following directions:

First, policy uptake should be quantified as a measurable indicator. For example, GT reports are formally submitted to major policy institutions and referenced in official strategic documents. Likewise, GST has seen partial integration into defence policy. Foresight programme could develop metrics such as the rate of policy incorporation, the number of departmental references, and citation frequency in official documents to systematically assess its strategic impact.

Second, stakeholder responsiveness should be integrated as an evaluative element. Although GT and GST solicit feedback from external experts through collaborative processes, these responses are rarely analysed quantitatively or systematically documented. Foresight programme could implement stakeholder evaluations—both pre- and post-publication—as well as response rate analyses, thus institutionalising a feedback loop as part of its performance metrics.

Third, a system of ex-post evaluation should be developed to measure forecast accuracy. While GT and GST provide scenario-based foresight, they lack mechanisms for verifying predictive accuracy. Foresight programme could enhance the credibility of its forecasting by systematically tracking the realisation of key variables, assessing hit rates, and evaluating how changes in these variables are reflected in policy.

Fourth, a tracking framework for longevity and diffusion of impact is required. Although GT and GST are cited in international forums and strategic reports, the breadth of their influence remains largely unquantified. Foresight programme could measure its sustained impact through indicators such as the number of references in international meetings, citations in official documents, and frequency of mention in global strategic dialogues.

Fifth, capacity-building effects should be tracked using both quantitative and qualitative indicators. GT and GST contribute to enhancing internal analytical capabilities, yet changes in participant competencies are not systematically assessed. Foresight programme could evolve

into a platform for strategic capacity development by monitoring long-term changes in strategic planning skills, policy analysis proficiency, and inter-agency collaboration abilities.

In summary, Foresight programme must develop an internally driven feedback system capable of capturing multi-dimensional effects—including policy uptake, societal responsiveness, forecasting efficacy, international influence, and capacity enhancement. Establishing such a performance-based evaluation framework is essential for Foresight programme to mature into a sustainable, institutionalised platform for national strategic foresight.

Recommendations for Talent Development

Since its inception in 1993, the UK Foresight Programme has played a vital role in providing science and technology-based strategic foresight. However, unlike comparative initiatives such as the GST and the US' GT series, Foresight programme lacks a coherent talent development strategy and a set of measurable performance indicators. In particular, the absence of internal educational infrastructure for policy foresight and strategic planning, strategies for building pools of expert personnel, and institutionalised scenario training frameworks across agencies poses significant threats to the sustainability and institutionalisation of foresight capacities.

In light of these challenges, five key mechanisms for talent development are proposed to enhance the professionalisation and sustainability of Foresight programme's strategic planning system:

First, there is a pressing need to establish and institutionalise a clear Talent Development Strategy. This should go beyond mere credentialing to focus on cultivating practice-oriented strategic experts capable of navigating uncertain policy environments. The goal must be to strengthen strategic thinking and problem-solving capacities as core competencies.

Second, the internalisation of strategic analysis education infrastructure is imperative. Scenario-based, practice-oriented learning and policy design training must be formalised, particularly through structured engagement with the activities of Futures Teams. Furthermore, it is essential to develop an integrated curriculum that includes critical methodologies such as Horizon Scanning and Futures Literacy.

Third, cross-departmental, scenario-based joint learning systems must be operated regularly and institutionally. This should not remain at the level of ad hoc application, but rather serve to reinforce interdepartmental strategy formation and policy experimentation. Such systems should be designed to enhance strategic agility and inter-agency coordination simultaneously.

Fourth, fostering hybrid strategic talent is crucial. By integrating scientific advisory functions with policy planning, a new model of ‘strategic policy designer’ — professionals with interdisciplinary and compound capabilities — must be defined and cultivated, thereby improving integrative problem-solving capacity.

Fifth, a refined talent lifecycle integration model is needed to underpin a performance evaluation framework. Through both qualitative and quantitative indicators — such as strategic mission alignment, scenario design experience, and contributions to policy formulation — the full cycle of recruitment, training, and redeployment must be systematically managed.

In conclusion, these five mechanisms represent foundational infrastructure for institutionalising talent development within the strategic planning ecosystem of Foresight programme. Moreover, they may serve as catalytic tools for embedding strategic competence more broadly across the public sector.

10.4 Conclusion

This chapter has undertaken a comparative analysis of strategic foresight systems in the UK and the US, and, drawing on the findings, proposed two alternative implementation mechanisms. In doing so, it aims to provide both a theoretical and practical foundation for the future design of national-level foresight systems.

Section 10.2 examined the structural differences between the UK’s centralised, policy-design-oriented model and the US’ decentralised, practice-driven approach. The analysis revealed that the success of foresight systems is determined not solely by analytical sophistication, but by the extent to which institutional elements such as executional embedment, performance feedback mechanisms, organisational learning, and talent development are integrated into operational structures. Particularly, the strategic agility, embedded implementation, and internalised culture of strategic thinking within US federal agencies provided key insights that

reaffirmed the analytical relevance of this study's framework, which revolves around three strategic pillars: Mission Implementation & Support, Evaluation, and Talent Development.

Building on this comparative foundation, Section 10.3 proposed two alternative foresight mechanisms:

Model A is a practice-oriented mechanism benchmarked against the US executional model. It seeks to strengthen the linkage between strategy and implementation within the UK foresight system by incorporating policy feedback-based performance evaluation structures and a capacity-building strategy for internal learning and professional training.

Model B focuses on science-based strategic policy design. It emphasises integrated qualitative–quantitative analysis, enhanced strategic communication functions and policy neutrality, and the establishment of cross-departmental networked governance to reinforce the long-term effectiveness of strategic planning.

Both models retain the strengths of the existing ROAMF framework, while introducing structural improvements aimed at enhancing operational effectiveness and long-term sustainability. As such, they offer valuable experimental templates for foresight system design in increasingly complex and adaptive policy environments.

Ultimately, this study presents the following strategic implications:

- Strategic Foresight is about execution, not just analysis. That is, the precision of forecasting is less important than how foresight becomes embedded within an organisation's strategic planning and policy implementation structures.
- Strategic Foresight must be linked to organisational learning. Institutionalising structures such as strategic thinking, scenario-based planning, and policy rehearsals is critical for enabling resilience in the face of complexity and uncertainty.
- Strategic Foresight is a talent strategy. Without systematically designed frameworks for talent development, foresight efforts cannot be replicated or scaled. In this sense, foresight is fundamentally a question of people and capability.

- Strategic Foresight is a systems infrastructure. It must not remain confined to discrete projects, but be embedded across the entire policy cycle—including policy design, budgeting, and strategic evaluation.

Therefore, strategic foresight must be reimagined not merely as a tool for anticipating the future, but as a core institutional mechanism and infrastructural foundation for national strategy and policy innovation. The comparative analysis and alternative mechanisms proposed in this chapter offer concrete and actionable design frameworks for realising this vision.

Chapter 11 Conclusion

11.1 Introduction

As the concluding chapter of this dissertation, this section aims to synthesise the key insights, conceptual contributions, and empirical findings that have emerged over the course of the study. The research has examined how strategic foresight can be institutionalised within public governance systems and translated into a viable and actionable strategic function. Particular attention has been paid to the comparative institutional dynamics of the US and the UK. Drawing upon an interdisciplinary approach that integrates policy decision-making theory with strategic management, this study redefines foresight as a core strategic capability applicable across the entire policy lifecycle, and offers a practical framework for its implementation.

This chapter is organised into six subsections. Section 11.2 revisits the central research question and outlines how the dual-model approach proposed in this study addresses key theoretical and practical gaps. Section 11.3 discusses the study's conceptual framework contributions, structured around three strategic pillars—Performance Management, Monitoring and Evaluation, and Talent Development—offering a structural foundation for the institutionalisation of strategic foresight.

Section 11.4 explores the broader implications of the research for the field of Futures Studies, highlighting opportunities for theoretical advancement and methodological innovation. Section 11.5 reflects on the limitations encountered during the research process and critically assesses the methodological trade-offs necessitated by the structural constraints of the doctoral thesis format.

Finally, Section 11.6 presents the author's proposed directions for future research. These include: (1) an in-depth investigation of strategic foresight applications in complex policy domains such as aerospace, public health, and disaster management; (2) empirical research into the cognitive dimensions of policy leadership and interdepartmental collaboration; and (3) the development of performance metrics to evaluate the integration of AI-based foresight tools with organisational learning systems.

Taken together, this chapter serves to reaffirm the academic and policy relevance of the study, and to lay the intellectual foundations for positioning strategic foresight as an applied and essential governance capability in 21st-century public administration.

11.2 Return to the Research Questions and Response

This study was guided by the following research question:

“What lessons can be drawn from the evolution of strategic foresight practices within the US government, and how might an integrated conceptual framework and process model—grounded in exemplary cases from both the US and the UK—be developed to bridge the gap between theory and application, thereby enabling more effective implementation in public governance?”

In response to this research question, the study undertook a systematic comparative evaluation of the foresight mechanisms employed by the US and the UK. Particular attention was given to institutional design, strategic functionality, and implementation capacity in the contexts of national emergency preparedness and long-term policy planning. Through this cross-national inquiry, two refined models were developed:

- Newly Refined Model A: based on a practice-oriented foresight system inspired by the US approach, placing emphasis on full-cycle mission implementation and support integration, actionable delivery, and institutional learning.
- Newly Refined Model B: grounded in a scientific evidence-based structure, enhanced through the integration of insights from the US GT reports and the UK MOD’s GST series.

Both models retain the core components of the original GO-Science's Futures Framework—Rationale, Objectives, Evaluation, Implementation & Monitoring, and Evaluation & Feedback—that integrates the final two stages (Monitoring and Evaluation) of the UK ROAMF framework.

Tri-Pillar Mechanism of Reform

Moreover, these models address distinct yet complementary dimensions of foresight governance. Whilst Model A exhibits pronounced strengths in execution, embedded training, and agency-led adaptability, Model B demonstrates maturity in analytical rigour, scenario design, and science-based legitimacy. Drawing upon the insights gained from both, this study puts forward a tri-pillar mechanism comprising:

- (1) Performance Management,
- (2) Monitoring and Development, and
- (3) Talent Development.

These three pillars function not only as structural components within the refined models but also as practical enablers that facilitate the operationalisation of strategic foresight throughout the policy lifecycle.

(1) Performance Management

In both models, Performance Management emerges as a cornerstone in addressing the persistent disconnect between foresight outputs and their practical application within public governance.

Model A advocates the embedding of foresight into departmental planning structures, budgetary cycles, and leadership development platforms. U.S. agencies such as the USCG and NASA's OTPS exemplify this full-cycle integration of strategic foresight into operational delivery. Such practices enable foresight to transcend theoretical outputs, translating them into practical, scenario-led strategic action. Model B, whilst retaining a UK-centric analytical foundation, seeks to enhance the external strategic relevance of foresight. Drawing upon the GT and GST reports, it emphasises the importance of strategic communication, analytical independence, and cross-departmental collaboration in reinforcing the public value and neutrality of foresight activities. It proposes a hybrid analytical framework that integrates both qualitative and quantitative foresight tools to enable more robust and transparent performance assessment.

(2) Monitoring and Development

Both models address the necessity for structured monitoring mechanisms by integrating Evaluation and Feedback into a continuous developmental monitoring cycle.

Model A draws upon US practices to institutionalise real-time evaluation systems, scenario-based training modules, and performance-tracking feedback loops. These methods aim to establish a closed-loop process extending from foresight design through to post-implementation assessment. Model B builds upon this foundation by introducing quantifiable indicators for measuring policy uptake, stakeholder responsiveness, and capacity-building outcomes. In addition, it advocates for the implementation of forecast accuracy audits and influence diffusion tracking tools to assess how foresight outputs inform strategic direction over time. Taken together, these models converge on the imperative for adaptive learning systems that not only assess the achievements of foresight, but also continuously inform its refinement and future applicability.

(3) Talent Development

The third pillar—Talent Development—is essential for sustaining a foresight-capable public administration.

Model A places emphasis on competency-based training, internal learning networks, and agency-level capacity-building strategies. This reflects the American approach of embedding foresight capabilities across all organisational levels through applied learning and role-specific development frameworks. Model B complements this by promoting interdisciplinary training models, scenario-based policy design curricula, and the development of hybrid skillsets—particularly the cultivation of strategic policy designers who are able to integrate scientific analysis with policy pragmatism. It further advocates for lifecycle-based evaluation of talent progression, encompassing recruitment, training, deployment, and retention. In both models, talent is not regarded merely as a supportive function, but rather as a pivotal lever in ensuring the institutionalisation and credibility of foresight within public governance.

Summary of the Response

In summary, the comparative analysis and model development undertaken in this study directly address the central research question by presenting a dual-framework solution that bridges the gap between theory and practice. The two refined models—Model A’s practice-oriented foresight system and Model B’s evidence-based analytical framework—underscore the importance of aligning strategic foresight with practical implementation whilst maintaining analytical integrity.

Together, these models offer governments a structured and adaptive mechanism for embedding foresight across the entire policy cycle, from formulation to execution. By drawing upon best practices from both national systems and synthesising them into a tri-pillar mechanism, this research contributes meaningfully to the evolving field of anticipatory governance and proposes a scalable pathway for institutional foresight reform.

This reconceptualised approach serves not only to elucidate the design and operational dimensions of foresight, but also to consolidate its position as a dynamic, evaluative, and reflexive tool within the landscape of 21st-century public governance.

11.3 Conceptual Framework Contributions

The principal theoretical contribution of this study lies in the development of an integrated conceptual framework that reconceptualises strategic foresight through the combined lens of policy decision-making theory and strategic management. This framework is intended to institutionalise foresight as a core function of public governance—transforming it from a mere advisory or predictive tool into a practice-oriented, implementation-focused mechanism that operates across the entire policy lifecycle.

To achieve this objective, the study conducted an extensive literature review and comparative case analysis, examining the conceptual underpinnings of strategic foresight, the structural constraints and reform efforts within the UK’s policy system, and the institutionalised foresight practices embedded within the US administrative structure.

Strategic foresight, as defined herein, is not synonymous with forecasting or predictive analysis. Rather, it constitutes a non-deterministic and adaptive mode of strategic thinking that serves as a critical instrument for linking long-term planning with decision-making in government. Rooted in national security and technological foresight initiatives following the WWII, the concept has since expanded into fields such as science and technology policy, environmental governance, and corporate strategy. In the 21st century, it has emerged as a foundational capability for responding to complexity and uncertainty in national planning.

In the UK context, the short-termism embedded within the Westminster model and the rigidity of bureaucratic procedures have historically hindered the institutionalisation of long-term strategic thinking. While performance-based frameworks such as ROAMEF have been introduced, they remain limited in addressing complex, cross-sectoral policy challenges. Conversely, the US has gradually institutionalised foresight through its national security apparatus, particularly since the Cold War era, evolving into a more department-led, execution-oriented system that enhances strategic delivery and organisational learning.

Against this backdrop, the study demonstrates that foresight should not be confined to technical or analytical domains, but should instead be understood as an integrated capability—connecting policy formulation, implementation, and institutional learning. It argues that the effective institutionalisation of long-term strategic planning requires more than predictive capacity; it demands the organic linkage of foresight with both decision-making processes and implementation mechanisms.

Accordingly, this research synthesises core theories from public policy and strategic management, and operationalises them into a conceptual framework applicable to real-world policy design and execution. Based on this foundation, the present study synthesises and integrates key theories from policy studies and strategic management to propose a conceptual "Tri-Pillar" framework—centred on three strategic dimensions: performance management, monitoring and evaluation, and talent development—that is applicable to the practical design and implementation of public policy (see Section 11.2). This triadic structure reflects both theoretical coherence and practical applicability, thereby offering a novel contribution to the literature on public foresight.

Notably, the framework offers a significant reinterpretation of Lasswell's (1951) classical policy cycle model. Whereas Lasswell conceived policymaking as a linear and functionally distinct sequence (agenda setting → formulation → implementation → evaluation), the present

framework reconceptualises these stages as interlinked, reflexive processes. Foresight is thus not confined to any single stage of the cycle, but operates as a strategic capability that informs and adapts across the design, delivery, assessment, and reconfiguration of policy.

This integrative reinterpretation retains Lasswell's intellectual legacy while advancing it to meet the demands of contemporary policy environments, which are characterised by complexity, volatility, and the need for adaptive governance. As such, the framework embeds foresight within a more evolutionary and learning-oriented policy design architecture.

Derived from comparative analysis of strategic foresight practices in the US and the UK, the framework has been operationalised through two refined models:

- Newly Refined Model A, inspired by the US system, reflects a practice-oriented approach wherein foresight is tightly integrated with departmental structures, budgeting, leadership training, and operational manuals. This model emphasises strategic delivery and institutional learning, embedding foresight into the broader machinery of policy operations.
- Newly Refined Model B, drawing on lessons from GT and the GST series, proposes a more structurally sophisticated strategy. It emphasises analytical neutrality, enhanced strategic communication, integrated qualitative and quantitative evaluation mechanisms, and the longitudinal tracking of policy impact diffusion.

These two models are not mutually exclusive but rather complementary. While Model A focuses on embedding foresight capabilities into executional systems, Model B offers a robust institutional design grounded in analytical sophistication. Together, they expand the applicability and scalability of strategic foresight across varied governance contexts.

Thus, the proposed framework offers a strategic design roadmap that may be flexibly adapted to different national and institutional settings. It bridges the gap between theory and practice, offering both analytical clarity and operational guidance.

Dimension	Structural Limitations of Lasswell's 7-Stage Model	Model A: Practice-Oriented Integration	Model B: Analysis-Based Refinement
Structural Logic	Linear, functionally segmented stages	Integrated foresight across operational domains	Structured strategic framing based on analytical foresight
Feedback Mechanism	Minimal; Weak feedback between stages	Reinforced execution–learning loop	Systematic feedback from evaluation to redesign
Foresight Application	Limited to initial intelligence stage	Embedded foresight in budgeting, leadership, manuals, and delivery	Continuous future-oriented analysis and strategic communication
Learning Capability	Ex-post evaluation; Weak organisational learning	Enhances organisational learning through adaptive implementation	Institutionalises learning via long-term impact tracking
Responsiveness	Static, pre-defined processes	Dynamic execution and adaptation	Evidence-informed and analytically reflexive system

[Table 13] Evolving Policy Frameworks: Lasswell to Strategically Adaptive Model A & B, by Author

In summary, the key contributions of this study can be articulated in four principal areas:

- **Theoretical Integration:** By synthesising decision-making theory with strategic management, the framework offers a robust conceptual foundation for transitioning foresight from a predictive tool to a dynamic mechanism of policy governance.
- **Practitioner-Oriented Design:** The framework outlines a practical mechanism for structurally embedding foresight throughout the entire policy lifecycle-design, implementation, evaluation, learning, and redesign.
- **Empirical Validation through Comparative Cases:** The model's feasibility and scalability are substantiated through comparative analysis of strategic foresight practices in the US and the UK.
- **Institutionalisation Pathways:** The study proposes a strategic roadmap for embedding foresight as a critical capability within public governance, thereby advancing its institutionalisation at both strategic and operational levels.

Taken together, this integrative conceptual framework provides a strategic foundation for enabling governments to operate in a more anticipatory, adaptive, and learning-driven manner amid increasing uncertainty. More than a theoretical contribution, it serves as a tangible infrastructure for cultivating strategic foresight as a core competency of 21st-century public administration.

11.4 Implications of This Study for Futures Studies

This study reconceptualises strategic foresight through an integrated lens combining policy decision-making theory and strategic management, and operationalises it into a practice-oriented framework applicable to public governance. It contributes to a core aim of futures studies—the institutionalisation of futures thinking—proposing a shift whereby foresight becomes a foundational capability for policy design and execution.

Although futures studies have evolved through diverse national traditions, their policy-level impact declined in the early 2000s due to prediction failures, short-termism, and institutional challenges. While recent contributions, such as *Our World of Futures Studies as a Mosaic* (Villman et al., 2024), map global epistemological diversity, there is a continuing lack of comparative institutional research, especially concerning foresight's role within major governance systems like those of the US and UK. This study addresses that gap by linking foresight to real-world policy environments and organisational mechanisms.

Futures studies must now evolve across three interrelated domains:

First, there is a need for comparative research that explores the structural integration of futures thinking within contemporary policy systems. Traditional scholarship has focused on forecasting and scenarios, but rarely on institutional design. The three strategic pillars proposed—performance management, evaluation and learning, and talent development—provide a framework for embedding foresight into governance. Future studies should examine how regime type, government scale, civil service training, and policy cycles influence foresight's institutionalisation. In areas like national security or advanced technology, where information is classified, indirect inference—via policy documents, reports, and legal frameworks—can enable researchers to assess how foresight connects with formal policy structures.

Second, there is a need to examine the psychological foundations of leadership and interdepartmental collaboration in futures-oriented governance. Policy actors are influenced by cognitive biases, risk aversion, groupthink, and political framing, all of which shape how foresight is interpreted and used. Interdisciplinary research involving policy psychology, organisational behaviour, and behavioural economics is essential. Mixed-methods

approaches—such as decision-process mapping and simulation—can help uncover how foresight is internalised and acted upon within institutions.

Third, there is an urgent need to examine the interplay between AI-driven foresight technologies and organisational learning processes, and to develop quantifiable performance metrics accordingly. Future research should evaluate AI-assisted foresight implementations, measuring outcomes such as adoption rates, scenario accuracy, and responsiveness. The evolving relationship between human foresight and AI tools should also be explored to guide policy design and training systems.

11.5 Limitations of the Research

As with any doctoral research, this study has encountered a number of limitations—both contextual and structural—which must be acknowledged to provide an honest reflection of its scope and execution.

Firstly, a significant portion of the research period—approximately 1.5 years out of a total of four—coincided with the global COVID-19 pandemic. National and municipal lockdowns, travel restrictions, and the closure of research institutions inevitably caused delays in fieldwork, restricted access to physical archives, and limited opportunities for in-person interviews and institutional engagement. As a result, some elements of the original research design were necessarily scaled back or revised.

Despite these constraints, the research benefitted from a one-year field study in the US, during which strategic foresight practices were examined within several key federal agencies, including NASA, FEMA, and NIOSH. These institutions represent critical domains in national preparedness—namely aerospace, public health, and disaster management—and offered invaluable insights into how foresight is operationalised in practice.

However, due to the structural limitations imposed by the length and scope of a doctoral dissertation, it was not possible to fully elaborate on all empirical findings or to include in-depth comparative case analyses of each agency. This constitutes a methodological compromise: a broader array of data was collected than could be incorporated within the

confines of this thesis. It is hoped that these materials will be further developed in future academic outputs beyond the doctoral context.

Importantly, the extent of access and data collection achieved—particularly within high-security, high-functioning U.S. government institutions—would not have been possible without the generosity of time, openness, and intellectual engagement shown by practitioners on the ground. Their willingness to share perspectives and materials, and their recognition of the value of this research, were instrumental in shaping its outcome.

Equally, I wish to acknowledge that the progress made in this study, especially during challenging periods, was also sustained by the trust shown in me as a researcher, and by the encouragement I received in response to the clarity of my purpose and the depth of my commitment. Their support was not only practical but also profoundly motivational.

11.6 Next Steps in Research

Building upon the theoretical and practice-oriented contributions proposed within this study, the next phase of the author's research aims to pursue both the deepening of conceptual insight and the expansion of applied relevance. The following themes represent areas in which the author seeks to make direct scholarly contributions:

First, a more in-depth exploration of strategic foresight within the domains of aerospace, public health, and disaster management is envisaged. During the course of this research, preliminary investigations were conducted into the foresight frameworks of key US federal agencies, including NASA, FEMA, and NIOSH. However, due to the length constraints of the dissertation, these findings could not be fully incorporated. Future research will aim to illuminate how strategic foresight is integrated into complex and high-uncertainty policy environments in these sectors, with the objective of contributing to the design of mission-oriented and operational foresight architectures.

Second, informed by a long-standing interest in psychology, the author intends to undertake advanced empirical research into the cognitive factors that influence future-oriented leadership and collaborative capacity in public institutions. Policy decision-making is rarely guided by rational analysis alone; instead, it is frequently shaped by cognitive biases, risk aversion,

political pressures, and affective framing. Future studies will seek to identify how these psychological variables affect the uptake and application of strategic foresight, drawing on interdisciplinary methodologies from policy psychology, organisational behaviour, and cognitive science.

Third, the author aspires to contribute to the development of quantifiable performance metrics that link AI-driven foresight technologies with organisational learning systems. Although this study briefly addressed the relevance of such integration, the topic ultimately had to be excluded due to scope limitations. Looking ahead, particular emphasis will be placed on the design of a web-based foresight platform tailored to public and private sector institutions, allowing for the structured evaluation of foresight implementation through measurable indicators and monitoring frameworks. This will include metrics capable of assessing strategic impact, system responsiveness, and learning feedback loops.

Collectively, these strands of future inquiry aim to advance futures studies beyond the realm of theoretical discourse, positioning it more firmly as a practice-driven field that informs policy design and strengthens institutional foresight capabilities.

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Appendix A - Summary of Interviewee Profiles

Group 1: Interview participants based in the UK

NO.	Country	Participants Indicator No.	Entity (G-I-A-N)	Current or former affiliation(s)	In-person	Online
1	UK	1	Government	UK MHCLG & DLUHC, SAGE for COVID19 Pandemic		O
2	UK	2	Government	UK DES (Director General), UK Foresight Project Lead	O	
3	UK	3	Government	UK DfT & BIS, UK Foresight Project advisor		O
4	UK	4	Government	UK Prime Minister's Strategy Unit	O	O
5	UK	5	Government	9th UK GCSA, Special Representative for Climate Change		O
6	UK	6	Industry	Foresight Community Chair	O	
7	UK	7	Academics	University of Manchester	O	
8	UK	8	Government	UK DSTL in MOD	O	O
9	UK	9	Government	UK DSIT, DfT	O	
10	UK	10	Government	UK DLUHC (Current MHCLG)	O	
11	UK	11	Government	UK Defence Futures in MOD	O	O
12	UK	12	Government	UK DSTL in MOD	O	O
13	UK	13	Government	Anonymous	O	O
14	UK	14	Academics	University of Manchester		O
15	UK	15	NPO	NESTA	O	O
16	UK	16	Academics	University of Manchester	O	
17	UK	17	Government	Anonymous	O	O
18	UK	18	Government	UK Politician, Yale University		O
19	UK	19	Government	Anonymous	O	
20	UK	20	Government	Anonymous		O

* **Note:** The entity category “G-I-A-N” refers to *Government, Industry, Academia, and Non-Profit Organizations*. This content is identical to that presented in [Table 6] of the main text.

Group 2: Interview participants based in the US

NO.	Country	Participants Indicator No.	Entity (G-I-A-N)	Current or former affiliation(s)	In-person	Online
1	US	21	Government	US Coast Guard	O	
2	US	22	Industry	Foresight Institute CEO & President		O
3	US	23	Academics	University of Houston	O	O
4	US	24	Government	Anonymous	O	
5	US	25	NPO	Renown Futurist / Stanford University	O	
6	US	26	Government	US CIA Analysis Directorate		O
7	US	27	Industry	Renown Futurist / Foresight Community Chair	O	O
8	US	28	Government	USDA	O	O
9	US	29	Government	OPM, US Coast Guard	O	O
10	US	30	Government	National Intelligence Council Strategic Futures Group	O	
11	US	31	Government	US Space Force DOD Foresight Executive Principal Advisor	O	
12	US	32	Academics	Yale University	O	
13	US	33	NPO	Renown Futurist / Foresight Community Chair	O	O
14	US	34	Government	ODNI Strategic Futures Group	O	
15	US	35	Government	US EPA		O
16	US	36	Industry	Foresight Consulting	O	
17	US	37	Government	US CIA	O	
18	US	38	Government	US Government Accountability Office, PSFN Co-Founder	O	
19	US	39	Academics	Stanford University	O	
20	US	40	Academics	University of Houston, Teach the Future Founder (Current)	O	
21	US	41	NPO	Renown Futurist / Foresight Community Chair	O	
22	US	42	Industry	Salesforce Strategic Planning, Global Business Network		O
23	US	43	Academics	George Washington University		O
24	US	44	Industry	Foresight Consulting	O	
25	US	45	Government	Anonymous	O	O
26	US	46	Industry	Foresight Consulting (Climate & Foresight Strategy)	O	
27	US	47	Government	National Defense University Foundation	O	
28	US	48	Government	Anonymous		O
29	US	49	NPO	Futurist and technology forecaster		O
30	US	50	Academics	Stanford University	O	
31	US	51	Government	US CIA	O	

*** Note:** The entity category “G-I-A-N” refers to *Government, Industry, Academia, and Non-Profit Organizations*. This content is identical to that presented in [Table 7] of the main text.

Appendix B - Detailed Interviewee Profiles and Key Discussion Points

Participant #1

Name: Professor Alan Penn

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

Professor Alan Penn served as the CSA to the UK Ministry of Housing, Communities and Local Government (MHCLG) and its successor, the Department for Levelling Up, Housing and Communities (DLUHC) from 2019 to 2023. In this role, he provided independent scientific advice to inform policy on housing, planning, and urban development. He was also a member of the Scientific Advisory Group for Emergencies (SAGE) during the COVID-19 pandemic, contributing expertise on spatial and behavioural aspects of the built environment.

Main interview topics:

- Governance and Institutional Structure of UK Foresight
- CSA Meetings and Cabinet Office Engagement
- Lessons from the COVID-19 Pandemic

Participant #2

Name: Sir Alan Wilson

Mode of Interview: In-person (2 times)

Interview Site: UK

Consent Format: Written and signed statement

Sir Alan Wilson is a distinguished British academic and government adviser, known for his work in urban modelling and complex systems. He served as Director General for Higher

Education and Science at the UK Department for Education and Skills (DfES). He was also a former Lead of the UK Foresight Programme on the Future of Cities.

Main interview topics:

- UK Foresight Programme: Future of Cities
- Engagement with Government and Leadership

Participant #3

Name: Professor Brian Collins

Mode of Interview: Online (2 times)

Interview Site: UK

Consent Format: Verbal (recorded)

Professor Brian Collins is a respected British scientist and policy adviser with extensive experience in government science and technology leadership. He served as the CSA to both the Department for Transport and the Department for Business, Innovation and Skills from 2006 to 2011, playing a central role in embedding scientific evidence into policymaking across infrastructure, innovation, and transport policy. He was also appointed Special Adviser to the House of Lords Science and Technology Committee from 2013 to 2014, where he contributed to parliamentary scrutiny on matters of national scientific importance. Earlier in his career, Professor Collins held senior science roles in the national security sector, serving as Chief Scientist and Director of Technology at GCHQ from 1987 to 1991, and previously at DSTL in 1986.

Main interview topics:

- Government Culture and Foresight Engagement across Administrations
- CSA Meetings and Cabinet Office Engagement – Political Context

Participant #4

Name: Catarina Zuzarte Tully

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

Catarina Tully is a recognised expert in strategic foresight - She previously worked at the UK Prime Minister's Strategy Unit, where she contributed to the integration of foresight into central government policymaking, particularly in relation to long-term social, economic, and environmental challenges. She is currently the Managing Director of School of International Futures (SOIF), a globally respected organisation dedicated to embedding foresight into decision-making. She was interviewed with a particular focus on how UK government foresight is applied within the policy-making process. In particular, the lack of a publicly accessible organisational chart for government foresight functions was raised. She shared the report she authored, titled "A History of Foresight in UK Government, 1999–2019", which provides valuable insights into the development and use of foresight in UK public policy.

Main interview topics:

- Application of Foresight in UK Government Policy Processes
- Organisational Structure of Government Foresight

Participant #5

Name: Sir David King

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

Sir David King is a distinguished British scientist and diplomat who served as the 9th UK GCSA from 2000 to 2007. During his tenure, he played a pivotal role in integrating scientific evidence into government policy and was instrumental in launching the modern Foresight Programme through the GO-Science. Following his role as GCSA, Sir David was appointed the UK Foreign Secretary's Special Representative for Climate Change (2013–2017), where

he led international diplomatic efforts to address global climate challenges, including the lead-up to the Paris Agreement.

In the interview, he offered reflections on the current operation of the UK Government's foresight system, particularly in relation to the programme he originally established. He discussed the evolution of the GO-Science Foresight Programme, noting its strengths and areas where further strategic ambition and cross-governmental integration are needed. Drawing on his experience with both climate diplomacy and scientific advisory in government, he also commented on the UK's response to the COVID-19 pandemic, offering insights into how foresight capabilities could have been better mobilised to anticipate and mitigate such crises.

Participant #6

Name: Anonymous

Mode of Interview: In-person

Interview Site: UK

Consent Format: Written and signed statement

He serves as the Chair of a leading foresight community based in London. His firm was previously involved in contributing to the UK government's foresight toolkit, and he was interviewed on the perception and role of foresight within both government and industry in the UK.

Participant #7

Name: Prof Ian Miles

Mode of Interview: Online and In-person

Interview Site: UK

Consent Format: Written and signed statement

Professor Ian Miles is a leading expert in technology foresight, innovation policy, and science and technology studies, based at the University of Manchester. He has made significant contributions to both academic research and policy practice in these fields. He is one of the authors of *The Handbook of Technology Foresight: Concepts and Practice* (2009), which

remains a widely cited reference in futures and foresight studies. His work has been instrumental in shaping understanding of the development and implementation of foresight programmes in the UK.

The interview focused on the history and notable gap in academic research on UK foresight since 2009, as well as his perspectives on its future direction. Professor Luke Georghiou also took part in the discussion, where they reflected on their initial motivations for evaluating foresight, emerging research trends, and the broader evolution of the field.

Participant #8

Name: Dr Jim Maltby

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

Dr Jim Maltby is a senior expert in science and technology policy with extensive experience in the UK's defence and security sector. He has worked at the Defence Science and Technology Laboratory (DSTL), an executive agency of the UK MOD, where he has led and contributed to a range of projects in strategic foresight, horizon scanning, and long-term risk analysis.

- Governance of Cross-Government Foresight and Advisory Structures
- Institutional Relationships within UK Strategic Foresight
- Stakeholder Engagement in Central Foresight Processes

Participant #9

Name: Anonymous

Mode of Interview: In-person

Interview Site: UK

Consent Format: Verbal

The interviewee is a current civil servant from another department who had participated in the GOS Foresight Programme shortly after the COVID-19 pandemic. Through this conversation, I was able to gain a clearer understanding of the current internal structure and team composition within the GOS Foresight Programme, and begin to map its organisational framework.

Participant #10

Name: Prof Jeremy Watson

Mode of Interview: In-person

Interview Site: UK

Consent Format: Written and signed statement

Prof Jeremy Daniel McKendrick Watson served as Chief Scientific Adviser (CSA) to the Department of Communities & Local Government (later the Ministry of Housing, Communities & Local Government, MHCLG) from 2009 to November 2012.

The discussion focused on the role and function of the CSA within government, and the relationship between departmental CSAs and the Government Chief Scientific Adviser (GCSA). He particularly emphasised the importance of cross-departmental collaboration—both among departments with a clear link to foresight projects and those where the relevance may be less immediately apparent—stressing the value of inclusive, cross-cutting engagement in long-term strategic policymaking.

Participant #11

Name: Colonel Joachim Isacsson OBE

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

Colonel Joachim Isacsson OBE has been serving in the Strategic Foresight Team of the UK MOD's Defence Futures (formerly DCDC) at the Military Strategic Headquarters since 2013. He holds the position of Assistant Head of the Team.

The interview covered the GST programme, including its initial development process, the nature of international collaboration, and the evolution leading to the 6th and 7th editions. Further discussion explored the relationship between the GO-Science and the MOD, as well as the roles of key MOD departments involved in foresight activities—including DCDC and DSTL. The conversation also included a comparative discussion with the United States’ Global Trends reports, produced by the NIC, highlighting key differences in purpose, methodology, and institutional positioning. Following the interview, he kindly shared an overview document of the GST 7 programme, which was under development at the time.



Participant #12

Name: Dr John Carney

Mode of Interview: Online and In-person

Interview Site: UK

Consent Format: Verbal (recorded)

Dr John Carney is a Principal Scientist within the Systems Thinking and Consulting Group at the UK MOD’s Dstl. He specialises in applying systems thinking approaches to complex defence and security challenges, supporting strategic planning and policy development. He has held several leadership roles within Dstl, including serving as Team Leader for Horizon Scanning, where he was responsible for developing anticipatory insights to inform long-term defence strategy.

The interview covered topics similar to those discussed with Dr Jim Maltby, including:

- The relationship between foresight bodies within the MOD and other departments.
- The role of Dstl in comparison to DCDC
- The engagement of external stakeholders in foresight work, including Parliament, international partnerships, and wider cross-government collaboration.
- Dr John Carney's post in the GOS Foresight Programme blog
(<https://foresightprojects.blog.gov.uk/2018/03/08/the-ten-commandments-of-horizon-scanning/>)

Participant #13

Name: Anonymous

Mode of Interview: Online / In-person

Interview Site: UK

Consent Format: Written and signed statement

The interviewee is a civil servant from DSIT with in-depth knowledge of the Foresight Programme within the GO- Science. The discussion focused on the role, history, and impact of the Foresight unit, including how it currently operates within government. The interviewee also provided advice on potential sources of information and materials relevant to my research.

Participant #14

Name: Anonymous

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

The interviewee is a leading thinker in strategic foresight, sustainability, and urban futures. His work explores complex systems and long-range thinking for tackling global challenges such as climate change, inequality, and urban transformation. He has developed innovative foresight methods including "synergistic thinking" and "visual foresight mapping", which integrate qualitative and participatory approaches to scenario-building and policy design.

The interview focused on strategic foresight activities and concepts at the national and local government levels in the UK, as well as within the academic sector.

Participant #15

Name: Laurie Smith

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

Laurie Smith is Head of the Mission Discovery team and Head of Foresight Research at Nesta, the UK's innovation agency for social good. His work focuses on applying foresight and futures thinking to inform more innovative, inclusive, and long-term approaches to public policy and strategy.

- The current state and development of national strategic foresight in the UK
- How the UK government's strategic foresight system could be further strengthened or improved in terms of institutional design, capacity, and influence.
- The key challenges involved in conducting long-term strategic foresight within government, including political, organisational, and methodological constraints.

Participant #16

Name: Prof Luke Georghiou

Mode of Interview: In-person

Interview Site: UK

Consent Format: Verbal (recorded)

Professor Luke Georghiou is Deputy President and Deputy Vice-Chancellor at the University of Manchester. He is internationally recognised for his work in innovation policy, foresight, and evaluation, particularly in tracking the evolution of foresight methodologies and assessing their influence on policy development. He co-edited The Handbook of Technology Foresight:

Concepts and Practice (2009) with Professor Ian Miles, a seminal text in the field of futures studies. He joined the interview alongside Professor Ian Miles, offering insights as a key figure and witness to the development of the UK's national foresight programmes over the past decades.

Participant #17

Name: Anonymous

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

The interviewee is currently based in academia and previously served as a senior official within the UK Government Office for Science, where they led the Horizon Scanning Programme.

The interview focused on the processes, team structure, and current state of government foresight work, providing insights into how foresight has been operationalised within government and how it has evolved over time.

Participant #18

Name: Rory Stewart

Mode of Interview: Online

Interview Site: UK

Consent Format: Verbal (recorded)

Rory Stewart is a former British diplomat, and politician, known for his work in international affairs, development, and public service reform. The interview focused on his perspectives on the UK political system and governance, particularly in relation to the use of strategic foresight in policymaking. He shared his views on the strengths and limitations of the UK government's foresight capacity, and how long-term thinking could be better integrated into public decision-making.

Participant #19

Name: Anonymous

Mode of Interview: In-person

Interview Site: UK

Consent Format: Verbal (recorded)

The interviewee is a former senior government official who was involved in the UK foresight programme and participated in SAGE during the COVID-19 pandemic. The discussion focused on the government's response during the pandemic, the lessons learned, and their views on how the UK's strategic foresight and preparedness systems should evolve in the future.

Participant #20

Name: Anonymous

Mode of Interview: Online

Interview Site: UK

Consent Format: Written and signed statement

The interviewee is a civil servant from DSIT with in-depth knowledge of the Foresight Programme within the GO-Science. They participated in the interview alongside Participant #13, as a colleague, and in addition to responding to the main questions, they also offered useful suggestions for locating further relevant materials to support the research.

Participant #21

Name: Aaron Davenport

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee was a senior policy researcher at the RAND Corporation, specialising in national security, maritime operations, and strategic foresight. He has played a leading role in advancing future-oriented planning for the USCG through extensive research and scenario development. He is a principal author of two key publications supporting the Coast Guard's Evergreen Strategic Foresight Programme; 1) "USCG Project Evergreen V: Compilation of Activities and Summary of Results (2022), 2) Developing New Future Scenarios for the U.S. Coast Guard's Evergreen Strategic Foresight Program (2020).

The interviewee's work focuses on applying rigorous analytical methods to help government clients prepare for complex, uncertain futures. His broader portfolio at RAND includes projects on defence modernisation, resilience planning, and operational strategy for homeland security agencies.

Main interview topics:

- Evolution of the U.S. Coast Guard's Evergreen Strategic Foresight Programme
- National-Level Foresight Infrastructure and the Role of Advisory Bodies
- Leadership and Talent Development for Strategic Foresight

Participant #22

Name: Allison Duettmann

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Allison Duettmann is the President and CEO of the Foresight Institute, a non-profit organisation dedicated to promoting long-range thinking and transformative technologies—spanning biotech, nanotech, neurotech, AI, space, and molecular machines.

Main interview topics:

- Strategic Foresight and Emerging Technologies
- Institutionalising Strategic Foresight in the U.S. Government Context

Participant #23

Name: Andy Hines

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Dr Andy Hines is an Associate Professor and Programme Coordinator of the Graduate Programme in Foresight at the University of Houston. He has collaborated with Dr David Bengston at the USDA Forest Service on applying and adapting strategic foresight methodologies within the USDA. Together, they developed and implemented a foresight framework tailored to the public sector, with a particular focus on environmental futures and land management.

Main interview topics:

- Impact of Strategic Foresight on Policymaking Rationality
- Lessons from Public Sector Adoption of Foresight Frameworks
- Future Directions for Advancing Strategic Foresight in Policymaking

Participant #24

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee served for 14 years at the U.S. CIA analyst. His work involved multilingual analysis, strategic translation, and intelligence support across a variety of domains.

The interview explored the functions of the U.S. Intelligence Community in supporting policymaking, particularly its role in strategic analysis and decision support. He also facilitated a follow-up interview with a senior colleague on the leadership's role in the policymaking process.

Participant #25

Name: Brock Hinzmann

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Brock Hinzmann is a veteran futurist and technology forecaster, known for his long-standing work as a futures researcher and “sensemaker” at SRI International (formerly the Stanford Research Institute). His work has focused on helping organisations anticipate and prepare for emerging technological and societal developments. Brock Hinzmann also contributed to major U.S. strategic foresight efforts, notably the National Intelligence Council’s Global Trends 2025 and Global Trends 2030 reports, which have informed long-term policy thinking at the national and international level.

The interview focused on his experience contributing to U.S. government strategic foresight efforts, including the Global Trends 2025 and Global Trends 2030 reports, and his reflections on how these approaches compare to foresight practices in other countries and in the private sector.

Participant #26

Name: Anonymous

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

The interviewee is a retired Senior Federal Executive with more than 30 years of experience in the U.S. Intelligence Community. The interview explored the challenges of establishing an integrated strategic foresight unit with a whole-of-government approach within the U.S. legislative or executive branches, the role of the NIC's Global Trends Reports in fulfilling such a function, and the nature of collaboration between the CIA and the NIC during the production of Global Trends 2025, alongside reflections on why “strategic foresight” remains an unfamiliar concept among many CIA officers despite the agency’s engagement in strategic foresight methods.

Participant #27

Name: Dr Clement Bezold

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Dr Clement Bezold is a pioneering futurist and founder of the Institute for Alternative Futures (IAF), established in 1977 to promote anticipatory democracy and the use of strategic foresight in public policy and social change. He also founded the for-profit consulting arm, Alternative Futures Associates, and the Public Sector Foresight Network.

The interview explored Dr Clement Bezold's experience during his doctoral research on Congress and foresight at the University of Florida in the 1970s, his collaboration with Alvin Toffler, and his broader reflections on the historical development of strategic foresight at the national level in the United States, including how current public sector foresight efforts are increasingly extending into global cooperation.

Participant #28

Name: Dr David Bengston

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Dr David Bengston is an environmental futurist and Research Social Scientist at the U.S. Forest Service Northern Research Station. He is also an adjunct professor at the University of Minnesota, where he contributes to teaching and research in environmental foresight and natural resource policy. With a strong background in strategic foresight, Dr Bengston has been a leading figure in applying horizon scanning, scenario planning, and participatory foresight methods to issues such as forestry, land management, and wildfire policy. His work aims to support long-term thinking and preparedness within public environmental agencies.

The interview explored Dr David Bengston’s motivations for pursuing research in strategic foresight, his reflections on the historical development and institutionalisation of foresight at the national level in the US, and recent international collaborations—particularly the joint work featured in the paper “Strategic Foresight in Forestry: How Canada and the United States Use a Neglected Tool to Build a Green, Healthy and Resilient Future (2022)”.

Participant #29

Name: Eric Popiel

Mode of Interview: Online and In-person

Interview Site: US

Consent Format: Written and signed statement

Eric Popiel was a Strategic Foresight Analyst at the U.S. Office of Personnel Management (OPM), where he manages the Strategic Workforce Foresight Team (SWFT). Prior to joining OPM, he served in the USCG, where he played a central leadership role in the Evergreen Program, the Coast Guard’s flagship Strategic Foresight Initiative.

The interview addressed the broader landscape of foresight activities within the U.S. federal government, with a particular focus on the strengths of the Evergreen Program in the USCG—highlighting its impact on mission execution, performance management, and strategic workforce planning.

Participant #30

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee is an expert in geopolitical risk, strategic forecasting, and the national security implications of climate change, with particular focus on the intersection of climate stress and geopolitical competition. The interviewee formerly held a senior leadership position in the

Strategic Futures Group at the U.S. NIC, where she co-authored the Global Trends report and led the intelligence community's analysis on environmental and climate security.

The interview explored why climate change must be treated as a critical national security issue and considered a long-term strategic threat within national-level foresight efforts, highlighting the need to integrate climate risks into future planning and geopolitical analysis. It also addressed the vision and approaches of the Global Trends report in supporting policymaking through long-range strategic insights.

Participant #31

Name: Dr Gabriele Rizzo

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Dr Gabriele Rizzo is a globally recognised futurist, author, and executive adviser in defence foresight. He currently serves as the Foresight Executive Principal Advisor to the U.S. Space Force under the Department of Defense.

The interview focused on the strategic foresight activities of the U.S. Air Force and U.S. Space Force, particularly from the perspective of mission deployment and human resources development. Special attention was given to talent management as a key element of long-term preparedness and the integration of foresight into workforce planning and leadership development within defence institutions.

Participant #32

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee is a distinguished political scientist and serves as the Professor of Political Science at Yale University. The interviewee's work spans political theory, democratic governance, and the practical application of political analysis to real-world problems.

Although not a foresight practitioner in the formal sense, The interviewee provided valuable insights on the future of democratic politics, linking strategic planning to broader questions of governance, institutional capacity, and long-term political direction. His reflections contributed to understanding how democratic principles and pragmatism can inform the development of future-oriented public policy.

Participant #33

Name: Jerome Glenn

Mode of Interview: Online and In-person

Interview Site: US

Consent Format: Written and signed statement

Jerome C. Glenn is the Executive Director, co-founder, and CEO of the Millennium Project, a leading global think tank on futures research established in 1996. As one of the most prominent figures in the field of global foresight, he has led the production of the influential State of the Future reports—now in its 20th edition. Glenn is widely credited with inventing the Futures Wheel technique in 1971, one of the most enduring tools in foresight practice.

The interview explored Glenn's reflections on the historical development of strategic foresight in the United States and other advanced economies, including the institutionalisation of futures work in national and international policy contexts. Particular attention was given to the evolution of foresight methods, including the origins and continued relevance of the Futures Wheel, and to his perspectives on how strategic foresight activities and project selection can best support global and national resilience.

Participant #34

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee is a senior former CIA analyst, currently serving as a high-ranking official involved in the production of the Global Trends report. The interview focused on the operational processes, institutional dynamics, and evolving approaches within the U.S. strategic foresight system, as well as the challenges and opportunities in integrating long-term futures thinking into national security and intelligence policymaking.

Participant #35

Name: Joseph Greenblott

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Joseph Greenblott is the Director of the Analysis Division within the Office of Planning, Analysis and Accountability at the U.S. Environmental Protection Agency (EPA), under the Office of the Chief Financial Officer. He has played a leading role in advancing strategic foresight and evidence-based planning across the federal government. He is the author of the influential report “Strategic Foresight in the Federal Government: A Survey of Methods, Resources and Institutional Arrangements (2018)”, which provides a comprehensive overview of how U.S. federal agencies apply foresight methods, allocate resources, and structure institutional support for long-term thinking.

The interview focused on two main areas. First, it addressed his 2018 report exploring the foresight practices of 19 federal agencies and the rationale for embedding long-term futures thinking nationally. Second, it examined the EPA’s foresight-related activities, including why the term “foresight” was largely absent from documentation, prompting an inquiry into the terminology used in EPA reports where foresight methods were applied, even if not explicitly labelled.

Participant #36

Name: Marina Gorbis

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Marina Gorbis is the Executive Director of the Institute for the Future (ITF), a pioneering non-profit futures research and consulting organisation based in Silicon Valley, with over 50 years of history. In this role, she has introduced futures thinking to hundreds of organisations across sectors, including business, education, government, philanthropy, and civil society.

The interview explored the history of strategic foresight in the U.S. government, focusing on how it evolved under successive presidential administrations, including reflections on varying levels of interest and neglect toward foresight among different presidents, and how those attitudes influenced institutional support and long-term policy thinking.

Participant #37

Name: Dr Matthew Burrows

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Dr Matthew Burrows is a leading expert in national security, intelligence, and strategic foresight. He previously served in the U.S. CIA and held numerous senior roles across the U.S. government. In 2005, he was asked to establish and direct the NIC Long Range Analysis Unit, which later became the Strategic Futures Group. In this capacity, he was the principal drafter of three major Global Trends reports between 2004 and 2012, including Global Trends 2030: Alternative Worlds, published in December 2012.

The interview explored the evolving role of the Global Trends reports, with particular focus on how Dr Burrows' Long Range Analysis Unit differed from earlier efforts under previous NIC Chairs. The discussion also examined how Dr Burrows came to serve as principal drafter of

three Global Trends reports during the Bush and Obama administrations, his personal entry point into strategic foresight, and his reflections on why foresight enhances national-level decision-making. The interview further addressed how the Clinton and Bush administrations approached the idea of a national-level strategic foresight unit using a whole-of-government approach, and the extent to which such institutionalisation of long-term thinking was supported or constrained during their respective presidencies.

Participant #38

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee is a retired U.S. federal official and an experienced strategic foresight practitioner. In the interview, the interviewee shared one's insights on the evolution of strategic foresight within U.S. federal agencies, drawing on one's professional background to discuss institutional developments, capacity-building efforts, and the growing role of foresight in long-term public sector planning.

Participant #39

Name: Prof Paul Edwards

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Professor Paul N. Edwards serves as Co-Director of the Stanford Existential Risks Initiative (SERI), a multidisciplinary research programme dedicated to identifying and mitigating global catastrophic and existential risks. The interview was conducted following his appearance at Policy Horizons Canada, a leading foresight institution, where he shared his perspectives on existential risks. The conversation focused on his analytical approaches to these risks and their significance within both academic research and long-range policy planning. The interview

focused on his approaches to assessing existential risks, including conceptual frameworks, methodological challenges, and their implications for national and international foresight efforts.

Participant #40

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee is a prominent futurist, and educator.

The conversation took place in the context of a foresight workshop led by the interviewee in DC, which brought together current and former foresight practitioners, including federal government officials and affiliated experts. During the workshop, one of the key themes addressed was the use of foresight in the U.S. government, providing a valuable opportunity to explore practical experiences and institutional perspectives on long-term strategic thinking in the public sector.

Participant #41

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee is a renowned futurist and technology forecaster based in Silicon Valley, California. With decades of experience analysing long-term trends in innovation, media, and emerging technologies, he has advised governments, corporations, and academic institutions worldwide. His work explores how exponential technological developments shape economic, political, and cultural futures. The interview focused on the history of strategic foresight within the U.S. government, and the influence of prominent futurists on the development and institutionalisation of foresight practices in national policy.

Participant #42

Name: Peter Schwartz

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Peter Schwartz is an internationally renowned futurist and business strategist, best known for his expertise in scenario planning and long-term strategic thinking. He currently serves as Senior Vice President of Strategic Planning at Salesforce, where he leads the company's global strategic dialogue and helps guide long-term corporate visioning. Schwartz was a co-founder and chairman of the Global Business Network (GBN), a pioneering foresight consultancy that collaborated extensively with corporations, governments, and international institutions to explore alternative futures and design strategies for an uncertain world. His seminal book, *The Art of the Long View* (1991), is widely considered a foundational text in scenario planning and foresight practice.

The interview focused on Peter Schwartz's early collaboration with Andrew Marshall, then Director of the U.S. Department of Defense's Office of Net Assessment, particularly his contributions to long-range strategic planning projects. The discussion explored how Schwartz addressed emerging security concerns such as global risks, technological disruption, and climate change—well before climate change was widely recognised as a national security issue.

Participant #43

Name: Richard Chasdi

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Professor Richard Chasdi is a scholar at George Washington University, specialising in scenario-based analysis of cascading risks—complex, interconnected threats that escalate through interaction, such as terrorism, pandemics, and cyberattacks. His research offers critical

insights into how such risks evolve and how institutions can build strategic preparedness in highly volatile environments.

The interview focused on applying scenario-based methodologies to analyse and prepare for cascading risks. Professor Chasdi discussed how interlinked threats can amplify one another, and how futures thinking and foresight tools—especially scenario planning—can be used to support national security, crisis response, and policy resilience in the face of systemic disruption.

Participant #44

Name: Richard Yonck

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Richard Yonck is a futurist, author, and the founder of Intelligent Future Consulting, where he advises businesses on emerging technologies and trends, speaks to professional and public audiences, and writes about the future of intelligence and innovation. His work focuses on the societal and organisational impacts of technological change, with an emphasis on foresight and long-term thinking.

The interview focused on the history and evolution of strategic foresight in the U.S. government, assessing both its institutional development and its limitations. Yonck also discussed opportunities for improvement, and the positive impact that strategic foresight can have in helping governments and societies prepare for long-term and systemic risks. His reflections contributed to a deeper understanding of foresight not only as a planning tool, but as a critical lens for navigating future uncertainty.

Participant #45

Name: Anonymous

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

The interviewee is a retired senior U.S. federal official who led the organisation's strategic planning and foresight efforts. She previously developed an innovative foresight methodology that integrated stakeholder interviews, scenario-based planning, and SWOT analysis, contributing to more inclusive and forward-looking decision-making in government.

Through the interview, I gained insights into the history and development of strategic foresight within U.S. federal agencies, as well as their current practices and activities in this field, informed by the interviewee's extensive career and experience.

Participant #46

Name: Roger Spitz

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Roger Spitz is an internationally recognised futurist, strategic foresight expert, and the founder of Techistential, a firm specialising in climate foresight and strategic sustainability.

The interview focused on the history and evolution of national-level strategic foresight activities in the United States, particularly in relation to how foresight has (or has not) been institutionalised within federal systems. As a practitioner deeply engaged in foresight initiatives across sectors, he has frequently interacted with strategic foresight officials in U.S. federal agencies, and therefore was able to introduce me to relevant resources and experts whom I might otherwise have found difficult to identify or reach.

Participant #47

Name: Sheila Ronis

Mode of Interview: In-person and Online

Interview Site: US

Consent Format: Written and signed statement

Dr Sheila Ronis is a distinguished authority on strategic management, national security, and foresight, with more than three decades of experience advising both government and academic institutions. Dr Ronis is an active member of the Federal Foresight Community of Interest in Washington, D.C., where she plays a leading role in promoting anticipatory governance across the U.S. federal system. In collaboration with Professor Leon S. Fuerth, she recently co-directed the Project on Foresight and Democracy and is currently co-leading the initiative Anticipatory Governance for Democracy, which seeks to embed long-term, participatory foresight practices within democratic governance frameworks.

The interview focused on the history, structure, and systems of strategic foresight within U.S. federal agencies, with particular attention to its evolution in the legislative and national security domains. The discussion explored how strategic foresight practices have developed institutionally and been integrated into policymaking across different sectors of government.

Participant #48

Name: Anonymous

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

The interviewee, an expert in strategic foresight who contributed to Global Trends: Paradox of Progress published in 2017, engaged in a discussion on the current trends and developments in strategic foresight across U.S. federal agencies.

Participant #49

Name: Theodore Gordon

Mode of Interview: Online

Interview Site: US

Consent Format: Verbal (recorded)

Theodore Gordon was a pioneering futurist and technology forecaster, best known for his foundational role in developing and popularising the Delphi method. In 1964, while at the RAND Corporation, he co-led the first large-scale Delphi study with Olaf Helmer, which became a landmark in long-range forecasting—predicting innovations such as artificial organs, machine translation, and robotics. He later co-developed the educational board game Future (1966), helping to introduce foresight concepts to the wider public. Earlier in his career, he served as Chief Engineer at McDonnell Douglas, contributing to the Saturn launch vehicle used in NASA’s Apollo missions—exemplifying his blend of scientific precision and visionary thinking.

He was a living witness to the evolution of strategic foresight in the United States and kindly shared his insights on its overall trajectory in our interview. On a personal note, I was fortunate to correspond with him extensively even before visiting the U.S., and his support proved invaluable. Regrettably, he passed away on 30 January 2024.

Participant #50

Name: Trond Arne Undheim

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

Dr Trond Arne Undheim is a futurist and strategic foresight expert, currently affiliated with Stanford University as a scholar focusing on global systemic risk, innovation, and public policy. In the interview, Dr Undheim shared methodologies for visualising cascading risk scenarios and using them to inform medium- to long-term risk preparedness strategies. The conversation also explored his distinctive research approach to cascading risks, particularly under conditions of deep uncertainty and complexity, and how this framework can be applied to national and global governance.

Participant #51

Name: Anonymous

Mode of Interview: In-person

Interview Site: US

Consent Format: Written and signed statement

The interviewee is a former intelligence professional and expert in technical analysis. The interviewee held senior roles within the Central Intelligence Agency, where he acted as an executive expert on advanced technical projects, contributing to national security and intelligence innovation.

The interview focused on leadership involvement in the policy process and how intelligence professionals support national policy formulation. Drawing from his experience in senior intelligence roles, he provided insights into how intelligence agencies interface with decision-makers, the challenges of integrating strategic foresight into policy planning, and the importance of technical expertise in informing long-term national security strategies. This perspective is particularly important for understanding strategic foresight because it highlights the institutional and operational mechanisms through which forward-looking intelligence can shape evidence-informed decisions. It also underscores the critical role of leadership engagement and technical insight in embedding foresight into national-level planning, especially in areas such as security, risk anticipation, and strategic resilience.

*** Note:** As noted in Chapter 6, Methodology (p. 132), although a total of 60 interviews were conducted with participants from the United States, Singapore, Finland, and the Republic of Korea, the dissertation ultimately draws on data from 51 interviewees.

Appendix C - Interview Protocol Samples

Sample 1:

[This section has been redacted for publication.]

Sample 2:

[This section has been redacted for publication.]

Appendix D - Interview Participant Information Sheet Sample

[This section has been redacted for publication.]

Appendix E - Interview Consent Form Sample

[This section has been redacted for publication.]

Appendix F – Ethics Approval Letter

[This section has been redacted for publication.]