INSTITUTE FOR INNOVATION
AND PUBLIC PURPOSE

IIPP POLICY BRIEF 30
DECEMBER 2024

STAKEHOLDER ENGAGEMENT FOR POLICY DESIGN AND PLANNING: THE "3XKNOWLEDGE" APPROACH TO FUTURES ANALYSIS

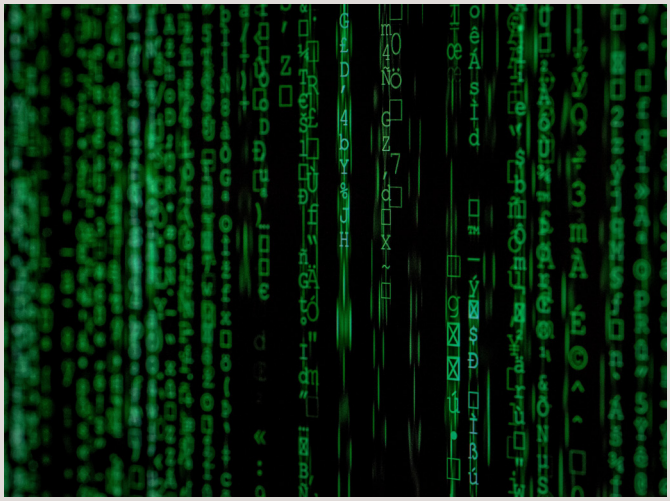
Valentina Amuso
School of Public Policy, University College London

Lieve Van Woensel
Former Foresight Advisor, European Parliamentary Research Service, European Parliament

Pierluigi Brombo
European Economic and Social Committee, EU

Anna Goulden
Institute for Innovation and Public Purpose, University College London

Maximilian Schwaiger
Institute for Innovation and Public Purpose, University College London



Source: Photo by Markus Spiske on Unsplash

Institute for Innovation and Public Purpose

Highlights

- Policymakers can create more effective and purpose-driven policies by systematically reflecting on future policy scenarios, implications and outcomes in collaboration with stakeholders. This involves building in-depth understanding and awareness of how grand challenges and societal problems may evolve in the future.
- The "3XKnowledge" roadmap introduced here provides a three-step guide to foresight exercises. It represents a flexible toolkit to structure thinking around future-oriented policy. The steps are as follows:
  1. A guide to stakeholders' ecosystem mapping & A systemic overview of the ecosystem and possible synergies to enhance policy effectiveness.
  2. Good practice in stakeholders' dialogues.
  3. A "balance" and "bias" checklist for policy development.

1. Introduction[1]

The multifaceted dynamics arising from contemporary challenges and crisis make effective policy design and implementation increasingly arduous. Spillover effects triggered by policy and innovation impact areas beyond the initial policy cluster in which the policy is conceived, often leading to unpredictable outcomes. These challenges are particularly acute in future-facing policy areas, where issues are highly unpredictable and rapidly evolving. Policy-makers are increasingly confronted with the need for effective anticipatory governance and forward-thinking in fields such as emerging technologies, digitalisation, and Artificial Intelligence (AI).

Effective anticipatory governance requires a full understanding of societal perspectives and a complete engagement with long-term developments. Gathering knowledge about future risks and opportunities is therefore valuable for preparedness in governance. However, existing analytical tools and approaches only partially address these needs. Short-term fixes, a lack of long-term perspective, and an incomplete analysis of the broader ecosystem often characterise policy actions.

Strategic Foresight can be particularly helpful in overcoming short-termism. It expands our understanding of the ecosystem in which to place the policy, identifies potential synergies, and guides the creation of future-oriented policy. Strategic Foresight is a sense-making exercise that involves portraying plausible developments to help envision a desired future, often via stakeholder engagement.[2] Stakeholders' engagement is critical to accessing multiple lived experiences around which to build knowledge about possible futures. It also facilitates the buying in of those policies decided in the engagement and foresight process by those actors that have been involved in them. Foresight exercises also function as a stress test for policies by envisioning possible impacts on plausible futures.

Strategic Foresight can support mission-oriented governance strategies. Achieving mission targets involves the continual problematisation and revision of strategy and policies, which must be adapted and upgraded to meet challenges effectively. Strategic Foresight can aid the process by analysing the ecosystem along possible future scenarios over a span going from beyond the horizon planning, i.e. 10 years, to longer perspective. This future-oriented approach would, in turn, help identify potential obstacles, synergies, and spillover effects stemming from considered strategies and policies to address

1 The report builds on insights from a workshop UCL School of Public Policy held in May 2024 at UCL that included participation from researchers and academics from university departments, representatives from international organisations, and policymakers at UK Government departments. The opinions expressed are solely those of the authors of the report and do not necessarily represent the views of institutions. We acknowledge the contribution of the Global Engagement Fund and the Knowledge Exchange Fund for the financial support provided to the workshop.

2 European Commission (2024) Strategic Foresight. Available: https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight_en

grand challenges.

Here, we suggest an approach to foresight analysis, 3XKnowledge, to guide, knowledge gathering and making for future-oriented policies.

3XKnowledge is an easy-to-use, three step toolkit that bridges together various needs in policymaking:

1. STEP 1:
   - How to map the stakeholder ecosystem
   - How to scan the horizon for the sectoral ecosystem to identify synergies and unintended consequences
2. STEP 2: How to engage in foresight dialogues with stakeholders to access knowledge via interactive approaches to develop and/or test scenarios
3. STEP 3: How to engage in a balance check of policy choices

GLOSSARY 1

Foresight	Process of gathering trends and reflecting on drivers of trends to engage with an analysis of possible futures.
Strategic Foresight	A discipline intent on exploring future possibilities to envision a preferred future.[3]
Scenario	A method for systematising one's insights about possible and alternative futures in which policy decisions may be placed, imagined, and tested. [4]
Participatory Approaches	Processes of stakeholder engagement that aim at supporting the collaboration, empowerment, and inclusivity of stakeholders in policymaking.
Stakeholder Consultation	A knowledge-gathering process that sees stakeholders as the repositories of knowledge that policy-makers intend to access to inform policy.
Stakeholder Engagement	A constructive and dialogue-based involvement of stakeholders. Co-production and collaboration influence stakeholder engagement depending on approaches and scope.[5]
Mission	Desired targets to address grand challenges, which require strategic planning.[6]

3 European Commission (2024)

4 Peter Schwartz, 1992, The Art of The Long View, Doubleday Currency, p. 4

5 Kujala, J., Sachs, S., Leinonen, H., Heikkinen, A., & Laude, D. (2022). Stakeholder engagement: Past, present, and future. Business & Society, 61(5), 1136-1196. Reed M. S., Graves A., Dandy N., Posthumus H., Hubacek K., Morris J., Prell C., Quinn C. H., Stringer L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. Journal of Environmental Management, 90, 1933–1949. Helbig, N., Dawes, S., Dzhusupova, Z., Klievink, B., & Mkude, C. G. (2015). Stakeholder engagement in policy development: observations and lessons from international experience. In Policy practice and digital science: Integrating complex systems, social simulation and public administration in policy research (pp. 177-204). Cham: Springer International Publishing.

6 Mazzucato, M. and Dibb, G. (2019)

2. What is Strategic Foresight?

Strategic Foresight can be a valuable analytical tool for exploring possible futures, often over a time span going from 10 to 30 years, or even longer, depending on the purpose of the exercise. Strategic Foresight aims to raise awareness of the broader ecosystem, shape policy, and stress-test governance strategies.[7]

Foresight is rooted in stakeholder engagement, as stakeholders often possess valuable knowledge of the ecosystem that may otherwise be difficult to access. Through their lived experiences, stakeholders can offer insights into possible trajectories that are otherwise challenging to gather. By structuring stakeholders' insights into a foresight process centred around a policy question or mission-oriented strategy, it becomes possible to define potential and plausible future developments that can guide policy formation.

The aim of Foresight is not predictive; rather, it focuses on exploring existing or emerging signals and how they may unfold in the future, to inform policy actions. Foresight employs a holistic approach to knowledge creation rooted in interdisciplinarity. This foundational feature makes foresight analyses particularly relevant for creative and experimental policy design, planning and implementation.

The Use of Scenarios in Foresight

Foresight encompasses various analytical methods within which scenario building assumes a particular relevance.[8] Scenarios depict parallel narratives around how the future may evolve. [9]

"Thinking through [scenario] stories and discussing their implications brings each person's unspoken assumptions about the future to the surface. Scenarios are thus the most powerful vehicles I know for challenging our 'mental models' about the world and lifting the 'blinders' that limit our creativity and resourcefulness".

Peter Schwartz, The Art of the Long View: Planning for the Future in an Uncertain World, 1997, p.XV

Scenarios may be presented in a tripartite structure such as best-case, status-quo, and worst-case scenarios, enabling consideration of the strengths of factors that may shape future developments. [10] Practitioners may also use orthogonal scenarios to construct narratives around two uncertainties selected via stakeholder engagement or desk research (e.g., high/low regulatory stringency and high/low AI diffusion). Specifically, orthogonal scenarios lead to the discussion of four different futures depending on various combinations of said uncertainties (e.g., scenario 1: high regulatory stringency and high AI diffusion; scenario 2: high regulatory stringency and low AI diffusion; scenario 3: low regulatory stringency and high AI diffusion; scenario 4: low regulatory stringency and low AI diffusion). [11] Orthogonal scenarios enable a conversation about concrete steps to identify possible public bads or support or structure support for a potential benefit to society, which is identified via the exploration of different plausible futures. Foresight analysis also extends to "what if" scenarios (e.g., what if the internet failed) to engage in a thought process to address resilience. [12]

The choice of scenarios depends on the specific policy question or mission-oriented strategies to expand and stress-test.

In the early 1990s, as South Africa entered a transition phase, scenarios were used to explore potential developments over the next ten years. This scenario-building exercise involved 22 individuals from diverse backgrounds and ideological perspectives. One such scenario, "Flight of the Flamingos," envisioned a future where a resolute political settlement followed by good governance

7 Van Woensel, L. (2020). A Bias Radar for Responsible Policy-Making: Foresight-Based Scientific Advice, Plagrave

8 Sus, M. (2017). Towards the European Union's Foreign Policy 2025–Taking Stock of the Dahrendorf Foresight Project. Global Policy, 8, 115-125.

9 Bezold, C. (2010). Lessons from using scenarios for strategic foresight. Technological forecasting and social change, 77(9), 1513-1518. For a complete overview of scenarios, please see: Wright, D., Stahl, B., & Hatzakis, T. (2020). Policy scenarios as an instrument for policymakers. Technological Forecasting and Social Change, 154, 11997

10 Wright, D., Stahl, B., & Hatzakis, T. (2020). Policy scenarios as an instrument for policymakers. Technological Forecasting and Social Change, 154, 119972.

11 Wright, D., Stahl, B., & Hatzakis, T. (2020).

12 See Panel for the Future of Science and Technology (STOA): https://www.europarl.europa.eu/stoa/en/publications search?textualSearch=&publicationTypes=AT_A_GLANCE&startDate=&endDate=

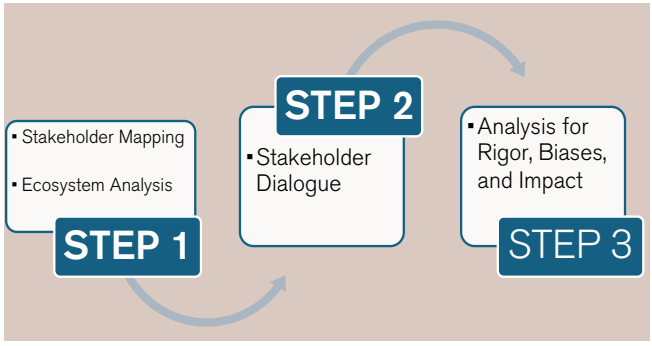
could lead to inclusive growth.[13] Another scenario, "Ostrich," explored the possible consequences of the government in office hardening its stance, causing negotiations for transition to fail. The resulting crisis would, however, likely be followed by the reopening of the talks.[14] Like an ostrich with its head in the sand, the government initially ignored an outcome but had to confront it, likely causing further instability.[15] The scenarios were widely discussed and distributed. They have been acknowledged for encouraging the National Party's to agree to a negotiated settlement and steering the ANC's approach to economic policy.[16]

3. How to engage with foresight analysis: 3XKnowledge Roadmap

The 3XKnowledge roadmap identifies three STEPS to guide foresight analyses. These steps can aid foresight exercises by suggesting an approach to map stakeholders, improving the representation of views, engaging in a broader study of the ecosystem in which the policy is placed, defining practices to support stakeholder dialogue, providing guidance to structure and conduct stakeholder dialogues, and offering a checklist to support balanced policies.

The aim of the roadmap is to provide an easy-to-use toolkit to support policy preparedness and approaches that look at the long-term horizon to build a coherent vision to address grand challenges.

Figure 1: "3XKnowledge" Roadmap



4. STEP 1. The Ecosystem: Stakeholder Mapping and Sectoral Ecosystem

Any conversation around policy formulation should start by gathering a comprehensive understanding of the stakeholder ecosystem and sectoral ecosystem. This step not only provides the necessary knowledge to formulate well-crafted policies but also helps detect possible and emerging opportunities and challenges in implementation. Moreover, it proves to be crucial in the implementation of the policies stemming from the process as the involved stakeholders are more likely to buy much more easily in those policies that they have contributed to design. This stakeholders' engagement is defined *participatory foresight.*

Stakeholders can provide a nuanced understanding of the challenge and potential spillover effects, including societal hopes and fears stemming from policy choices. While most attention in policymaking is on evidence-based policy, Foresight emphasises the importance of societal-based evidence. The policy formulation and implementation necessitate a robust understanding of societal hopes and fears.[17] Even the best-crafted policies may otherwise fail due to citizens' lack of trust or policy-makers' partial understanding of critical societal interactions. Awareness of concerns may enable policy-makers to engage in dialogues and define solutions to support implementation.

The knowledge-building process in Foresight relies heavily on stakeholder engagement. [18] While stakeholders' consultation and some forms of engagement are standard tools in policymaking, in Foresight, stakeholders' engagement refers to a participatory knowledge production process. Stakeholder engagement plays a crucial role in guiding and shaping the development of foresight scenarios. It is precious for avoiding blind spots and identifying previously unknown or unexplored

13 Galer, G. (2004). Scenarios of change in South Africa. The Round Table, 93(375), 369-383.

14 Galer, G. (2004).

15 Galer, G. (2004).

16 See Government Office for Science: https://gisf.ngo/wp-content/uploads/2020/02/0350-Rhyddarch-2009-Foresight-Horizon-Scanning-Centre-Scenario-Planning.pdf

17 Van Woensel (2020)

18 Miles, I. (2010). The development of technology foresight: A review. Technological forecasting and social change, 77(9), 1448-1456.

concerns and risks. Specifically, it can support:

Anticipation: Stakeholder insights can help identify emerging threats and vulnerabilities before they become significant risks.

Preparedness: Collaborative and participatory strategic planning aids in developing strategies and contingency plans to mitigate potential incidents and minimise their impact.

Adaptation: A stakeholder-centred policy formulation ensures the development of policies that can withstand and recover from disruptions while maintaining long-term sustainability in the face of change.

4.1 STEP 1. Component 1 – Stakeholder Mapping

The notion of stakeholder is to be understood broadly to encompass those who are, presently, or may be, in future, affected, have influence, or have knowledge of the subject.[19] How stakeholders are defined may depend on the project's specificities, the initial policy question, and the type of analysis that practitioners intend to develop.

While studies abundantly analyse forms of stakeholder engagement and identification[20], more guidance is needed on how to sustain the representativeness of views in foresight exercises – this guide may also be followed for any policy process beyond foresight.

4.1.1. Stakeholder Mapping: How to put it into practice

The first step involves gaining a broad understanding of the stakeholder ecosystem, which can be achieved by answering the seven questions below. Reflecting on the stakeholders' attributes, relationships, and interactions, as prompted by the questions below, is crucial for developing a comprehensive picture of the context in which the innovation and subsequent policy may evolve.

A viable approach to stakeholder mapping could involve relying on a set of questions developed by Reed and Curzon to engage with stakeholders.[21] We adopted and, at times, modified these questions (see below) to address additional concerns regarding impact, causality, and future-oriented dynamics as discussed during the workshop[22]:

1. Who can contribute to the project or policy?
2. Who will be directly affected by it, and what are the potential secondary effects on those not directly impacted?
3. Who could be concerned about the outcomes?
4. Who has influence, and who lacks it?
5. Who is represented in the decision-making process, and who or what is not? What are the reasons for their exclusion?
6. What possible coalitions or oppositions could form? Are there existing connections or interactions between groups that could influence the project?
7. How might influence, representation, and potential coalitions evolve in the future? What factors could drive these changes?

Answering these questions can provide a more structured and systemic-inspired understanding of stakeholders operating within a given policy and grand challenge ecosystem.

19 Kujala, J., Sachs, S., Leinonen, H., Heikkinen, A., & Laude, D. (2022). Stakeholder engagement: Past, present, and future. Business & Society, 61(5), 1136-1196.

20 Reed, M.S. and Curzon, R. (2015). Stakeholder mapping for the governance of biosecurity: a literature review. Journal of Integrative Environmental Sciences, 12(1), pp.15-38.

21 Reed, M.S. and Curzon, R. (2015). Stakeholder mapping for the governance of biosecurity: a literature review. Journal of Integrative Environmental Sciences, 12(1), pp.15-38.

22 See Amuso V. and van Wonsel, L. (2024) Foresight and Disruptive Technologies: A reflection on representativeness in stakeholder mapping for policy design, Unpublished manuscript. Questions were adopted and/or adapted from Reed, M.S. and Curzon, R. (2015). Stakeholder mapping for the governance of biosecurity: a literature review. Journal of Integrative Environmental Sciences, 12(1), pp.15-38. Gilmour, J., Beilin, R., & Sysak, T. (2011). Biosecurity risk and peri-urban landholders–using a stakeholder consultative approach to build a risk communication strategy. Journal of Risk Research, 14(3), 281-295.

4.2. STEP 1. Component 2 - Understanding the Ecosystem via Thematic Paradigms & Sectoral Analysis

While component 1 provides a structured way to explore the ecosystem and its stakeholders, because of the increasingly cross-cutting and interrelated nature of the challenges we are confronted with, it is crucial to go beyond the targeted ecosystem, exploring the broader sectoral ecosystem.

Existing paradigms such as STEEPED (Societal, Technological, Economic, Environmental, Political, Demographic, and Ethical) or PESTL (Political, Economic, Societal, Technological, Legal)[23] can also be relied upon to search for possible cross-disciplinary impacts and synergies.

In policy analysis, the STEEPED framework emphasises the need to place innovation or shock or policy strategy in a broader context and consider crossover between domains. In short, when analysing the impact of a specific innovation, shock, or threat, STEEPED suggests reflecting on societal considerations (e.g., health, marginalised communities, etc.), technological elements, including accessibility and efficacy of the innovation, and economic impacts, such as job market effects and affordability. The analysis includes environmental concerns, product and production safety, resource management, ethics, and demographics. Similarly, PESTL sets the context for considering the impact of innovation across a plurality of policy domains.[24]

While such approaches may offer relevant guidance, they should be perceived as dynamic rather than static and as such dynamically adaptable to policy needs. Frameworks such as PESTL, STEEP, or STEEPED can be modified to address specific policy concerns. Below, we provide an example of how STEEPED and PESTL(E) can be adapted to focus on the security and geopolitical domains. In a geopolitical context, the traditional STEEPED framework might be adapted to emphasise certain elements more heavily or to include additional considerations.

4.2.1. Example of an adapted STEEPED for "Geopolitical security concerns":

- **Strategic military interests (S):** Instead of just 'Societal,' this component would analyse how social dynamics, like public opinion on military actions, impact security policies.
- **Technology and cybersecurity (T):** This area has been expanded to address technological advancements. Precisely cybersecurity measures critical to national security.
- **Economic sanctions and trade (E):** This section focuses on the financial implications of international sanctions and trade policies, often leveraged in geopolitical strategies.
- **Environmental security (E):** This might include an analysis of environmental warfare or the impact of military actions on ecological sites.
- **Political alliances and treaties (P):** This section concentrated on the role of political agreements and partnerships, which are crucial in geopolitical strategies and their broader impact on other countries.
- **Ethical implications of warfare (E):** Addressing the ethical considerations in deploying military technologies and strategies.
- **Demographic impacts (D):** This section examines how different population segments are affected by security policies, including refugee movements and civilian impacts in conflict zones.

4.2.2. Similar with PESTL(E):

The PESTL(E) framework might be adapted to emphasise dimensions more critical to security concerns:

- **Political (P):** Increased focus on international power dynamics, defence policies, and diplomatic relations.
- **Economic (E):** There will be greater emphasis on defence spending, economic sanctions, and the financial aspects of security initiatives.

23 See: https://pestleanalysis.com/pestel-framework/

24 Van Woensel, L. (2020). A Bias Radar for Responsible Policy-Making: Foresight-Based Scientific Advice, Plagrave

- **Sociological (S):** Exploration of national identity, public opinion on security measures, and the social implications of security policies.
- **Technological (T):** In-depth analysis of cybersecurity measures, surveillance technology, and technological warfare.
- **Legal (L):** This course examines international law, national security laws, and regulations governing the use of technology in surveillance and warfare.
- **In case you add the 'E' of Environmental:** Newly introduced considerations such as military actions' environmental impact and resource scarcity's role in geopolitical strategy.

4.3. Meeting Sustainable Development Goals

Policies to address grand challenges may trigger international impacts. Evaluating the impact of formulated policies through the lens of the Sustainable Development Goals (SDGs) can help mitigate unintended consequences on a global scale. [25] In 2003 the EU launched its policy on biofuels with the intent of meeting its commitment under the Kyoto Protocol. However, the policy led to unexpected consequences.[26] For instance, the policy affected land use and was considered to have contributed to an increase in food prices having an impact on food security and poverty. [27]

5. STEP 2: Stakeholder Dialogue, using Good Practices Framework

After elaborating on critical insights based on stakeholders' roles, features, and relational dynamics (STEP 1), it is then needed to utilise thematic paradigms, assessing outcomes and reflecting on how to *Structure and Conduct* dialogues with stakeholders may be helpful.

Structuring. A primary reflection could focus on the structure and type of feedback and engagement, as well as how conversations and the co-production of knowledge can be formulated and advanced with stakeholders. In that case, the STEEPED framework (see above) can guide approaches to identify areas where other stakeholders may provide input, ensuring the representativeness of views (i.e., structural hurdles).

Conducting. A second reflection may instead focus on conducting the stakeholder dialogue once stakeholders have been identified and the ecosystem explored via STEEPED or PESTLE (STEEP 1). This is especially relevant given the increasingly polarised views that are held in society. Insights from the "disagreeing well" literature suggest how focusing on how such views come to be held can facilitate a broader understanding of opposing perspectives and promote constructive dialogue.[28] For instance, conversations often falter because people concentrate on what others claim to know (their beliefs and conclusions) rather than how they developed that understanding (their reasoning processes production)[29]. Following this, a productive way to continue the dialogue would be to ask: Can you explain how you arrived at this opinion?[30] The added value of this elaboration and reflection can only be achieved by having in depth and dynamic dialogue with stakeholders which mere desk-research on stakeholders' views may not provide, giving only a static view of them.

Stakeholder Dialogue

Foresight Dialogues (e.g., workshops, focus groups, etc.) aim therefore to go beyond mere information collection by structuring conversations that develop and access knowledge otherwise unattainable. Engaging stakeholders through constructive

25 This was suggested by Van Woensel (2020)

26 Discussed in Van Woensel (2020)

27 See FAO (2008) "Biofuels: Prospects, Risks and Opprtunities". Available at: https://www.un-ilibrary.org/content/books/9789210473798c004

28 UCL: https://www.ucl.ac.uk/about/disagreeing-well/resources

29 Boghossian, P. & Lindsay, J. (2019). How to have impossible conversations: A very practical guide. Da Capo Lifelong Books.

30 Boghossian, P. & Lindsay, J. (2019). How to have impossible conversations: A very practical guide. Da Capo Lifelong Books.

dialogue helps identify blind spots in the analysis and consider policy practices and potential unintended consequences. Stakeholder engagement surpasses simple consultation (e.g., online contributions, surveys, etc.), contributing to the analysis. It facilitates collaborative conversations on grand challenges, promotes mutual understanding, and uncovers synergies during discussions.

Successful engagement with stakeholders can take various forms. The dialogue stage may involve structured conversations around core questions concerning the scope of the foresight exercise to build and consider scenarios. Stakeholder dialogue may also focus on constructing or assessing scenarios developed through desk research. Additionally, stakeholder feedback is crucial for exploring core policies to address grand challenges, considering possible unexpected outcomes, and determining the necessary steps to support change.[31] For some further guidance please see resources on p.12.

6. Analysis for Rigor, Biases, and Impact

Once a plausible and preferable scenario has been identified following STEPS 1 & 2, it may be possible to engage in backcasting. Backcasting is a process that helps identify which policies are necessary, and at what stages, to achieve a preferred and desired future, often aligned with a specific mission (e.g. achieving net zero). [32]

Once those turning points and specifically tailored policies have been identified, a well-rounded analysis needs to engage in a "balance checklist" along the following lines – to be adopted according to different policy needs:

1. Is the analysis balanced? (i.e., takes sound evidence from multiple and diverse sources into account).
2. Is the evidence credible? What are the sources?
3. Is what has been suggested feasible? (considering resources, time, capacity, and knowledge). What are the required changes?
4. Have multiple policy options been considered and assessed before providing core recommendations? What may be missing? (to address this, practitioners could rely on a capability framework and competency matrices)[33]
5. What is the impact on the long term? (Planned Adaptation in policy design could represent a viable approach to make policies future-proof)
6. Are there any unaccounted possible ripple effects? (The Futures Wheel and SWOT Analysis[34] may be helpful for this).
7. Are there any potential biases? [35]
8. Are there different ways to conceptualise the policy issue? (Employing Casual Layered Analysis helps examine how policy issues are framed and how these framings enable the formulation of policies.)[36].

31 Van Woensel (2020)

32 Van Woensel (2020)

33 Here is an example from the OECD, which can be adapted to meet the specific needs of the policy solution or to support innovation: https://www.oecd.org/careers/competency_framework_en.pdf

34 European Commission: https://wikis.ec.europa.eu/display/ExactExternalWiki/SWOT+analysis+-+strengths%2C+weaknesses%2C+opportunities+and+threats

35 See van Woensel (2020)

36 UN Global Pusle, https://foresight.unglobalpulse.net/blog/tools/causal-layered-analysis/

GLOSSARY 2

Planned Adaptation	Planned adaptation involves committing to the planned and continuous revision of rules and regulations defined in policies. Planned adaptation should also clarify how the necessary knowledge for the revision will be mobilised and how it will be used to inform the revision. One of the most developed examples of planned adaptation can be found in the US Environmental Protection Agency (EPA). In the US, the quality of the air is regulated via the Clean Air Act. The EPA defines quality standards for a set of pollutants to prevent negative health impact on the population. Standards should be revised every 5 years. There are mechanisms for engaging with reviews that include a series of steps involving both in-house and external experts and committees to gather and engage with the necessary knowledge.[37]
SWOT Analysis	Identifying Strengths, Weaknesses, Opportunities, and Threats involved stemming from a challenge, problem, or policy suggestion
Futures Wheel	The futures wheel is a visual tool used to explore the potential consequences of a central event or decision. At the centre is the event or decision being analysed, with primary consequences radiating outwards in the first ring, secondary consequences in the second ring, and so on. The structure forms concentric circles, with each layer representing different levels of impact. The purpose of the futures wheel is to help stakeholders systematically visualise and analyse the ripple effects of a decision. This process aids in identifying and mitigating negative impacts while also uncovering potential opportunities. Each primary consequence may trigger further unexpected impacts, and engaging stakeholders in such an analysis can help limit adverse spillover effects while also considering and harnessing positive spillover effects. A Futures Wheel analysis can also be structured along STEEPED or PESTEL to ensure that possible unintended consequences are analysed across different themes. An example of unintended consequences: The introduction of a congestion charge in London delivered, according to research, a drop in accidents[38] and a reduction in carbon monoxide, but research found that levels of nitrogen dioxide did not drop, they rather increased.[39] An increase in the use of diesel based transportation (e.g. buses and cabs) seemed to have been a cause. [40] This outcome was addressed via subsequent policies.
Biases & Assumption biases	

37 McCray, L. E., Oye, K. A., & Petersen, A. C. (2010).

38 Green, C. P., Heywood, J. S., & Navarro, M. (2016). Traffic accidents and the London congestion charge. Journal of public economics, 133, 11-22.

39 Green, C. P., Heywood, J. S., & Paniagua, M. N. (2020). Did the London congestion charge reduce pollution?. Regional Science and Urban Economics, 84, 103573.

40 Green, C. P., Heywood, J. S., & Paniagua, M. N. (2020).

Biases	A guide to checking for biases is crucial to ensuring neutrality in analysis. Bias refers to a systematic distortion or predisposition in thinking, often leading to a skewed interpretation of information. For instance, biases can arise from the methodology of the research upon which the analysis is based (e.g., sampling biases) or can be more ideological in nature (e.g., confirmation biases). Addressing these biases helps in maintaining objectivity and accuracy in the analysis.)[41]
Key Assumptions Check (KAC)	When constructing scenarios, it is essential to clearly articulate and be transparent about the assumptions that underpin the scenario development.
Causal Layered Analysis (CLA)	CLA is a widely used approach in future studies that structures analysis around four layers: 1) litanies (i.e., trends focused on data), 2) causes underpinning trends, including policy analyses, 3) worldviews, and 4) myths.[42] Through the identification of these four layers, it is possible to challenge widespread conceptualizations that dominate current thinking and support novel policies and approaches. For instance, overpopulation can be described using data and framed as a problem (litanies)[43]. The analysis of causes may focus on policies such as family planning. Worldviews that conceptualise overpopulation might align with a view of the world characterised by "scarce resources" or lack of women power. [44] Exploring the four layers enables an understanding of different narratives about policy issues, broadening perspectives, and recognising the multiple underlying worldviews that inhabit a grand challenge.

41 For a full list of possible biases see: Van Woensel (2020)

42 Inayatullah, S. (2004). The causal layered analysis (CLA) reader. Theory and case studies of an integrative and transformative methodology, 1, 1-52.

43 Inayatullah, S. (2009). Causal layered analysis: An integrative and transformative theory and method. Futures research methodology, version, 3, 1.

44 Inayatullah, S. (2009).

7. Conclusions

Strategic Foresight is an invaluable tool for addressing various policy and governance challenges. It encourages policymakers to explore future-oriented scenarios that inform decision-making and enhance policy quality. By adopting a long-term perspective, it becomes possible to anticipate how a particular policy choice may evolve over time. The successful application of foresight methods depends on a well-structured and systematic process. Here we introduced a three step 3XKnowledge roadmap which includes a systematic approach to stakeholder mapping, a clear understanding of the ecosystem in which the policy will operate, conducting stakeholder dialogues to ensure representativeness and foster productive conversations, and implementing checks to limit biases and maintain balance. Such a comprehensive process can significantly enhance policymaking and governance quality.

This 3XKnowledge may serve as a foundation for stakeholders' engagement and reflection, supporting foresight exercises and policy planning.

Cantering policy and strategic Foresight on the 3XKnowledge practices could enhance policy design and processes by:

- Seeing the big picture and understanding the ecosystem.
- Exploring issues through diverse perspectives (360 degrees).
- Being aware of biases and assumptions.
- Assessing possible consequences while collaborating interdisciplinarily.

Further Reading

On Foresight:

Government Office for Science (UK Cabinet Office) (2014) Futures toolkit for policy-makers and analysts. Available at: https://www.gov.uk/government/publications/futures-toolkit-for-policy-makers-and-analysts

UN Global Pulse Glossary. Available at: https://foresight.unglobalpulse.net/how-glossary/

OECD (2024) Foresight. Available at: https://www.oecd.org/strategic-foresight/

Van Woensel, L., & Joseph, V. (2017). Foresight: A policy tool for anticipating technology trends. Available at: https://epthinktank.eu/2017/09/01/foresight-a-policy-tool-for-anticipating-technology-trends/

EESC (2024) Strategic foresight report 2023. Available at: https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/strategic-foresight-report-2023

Van Woensel, L. (2020). A Bias Radar for Responsible Policymaking: Foresight Based Scientific Advice, Palgrave

On Scenarios:

Wright, D., Stahl, B., & Hatzakis, T. (2020). Policy scenarios as an instrument for policy-makers. Technological Forecasting and Social Change, 154, 119972.

Schwartz, P. (1997). Art of the long view: planning for the future in an uncertain world. John Wiley & Sons.

Robinson, D. K., Schoen, A., Larédo, P., Gallart, J. M., Warnke, P., Kuhlmann, S., & Ordóñez-Matamoros, G. (2021). Policy lensing of future-oriented strategic intelligence: An experiment connecting Foresight with decision-making contexts. Technological forecasting and social change, 169, 120803.

The Institute for Innovation and Public Purpose (IIPP) at University College London (UCL) brings together cutting-edge academic theory with teaching and policy practice, to rethink the role of the state in tackling some of the biggest challenges facing society.

IIPP works with partners to develop a framework which challenges traditional economic thinking, with the goal of creating, nurturing and evaluating public value in order to achieve growth that is more innovation-led, inclusive and sustainable. This requires rethinking the underlying economics that have informed the education of global public servants and the design of government policies.

IIPP's work feeds into innovation and industrial policy, financial reform, institutional change and sustainable development. A key pillar of IIPP's research is its understanding of markets as outcomes of the interactions between different actors. In this context, public policy should not be seen as simply fixing market failures, but also as actively shaping and co-creating markets. Re-focusing and designing public organisations around mission-led, public purpose aims will help tackle the grand challenges facing the 21st century.

IIPP is uniquely structured to ensure that this groundbreaking academic research is harnessed to tackle real world policy challenges. IIPP does this through its high-quality teaching programme, along with its growing global network of partners, and the ambitious policy practice programme.

UCL Institute for Innovation and Public Purpose
11 Montague Street, London, WC1B 5BP

@IIPP_UCL
ucl.ac.uk/IIPP