New Urban Agenda:
New Urban Analytics

Janice Morphet and Robin Morphet

August 2019

SUSTAINABLE DEVELOPMENT GOALS

New Urban Agenda: New Urban Analytics
A Report Prepared for the MacArthur Foundation

You can download copies of this report at
www.ucl.ac.uk/bartlett/casa/research

Authors

Janice Morphet

BSc, PGDip TP, MA (Mgt), MA (Pol and Gov) MA (Lit), PhD, FRTPI FAcSS

Janice Morphet is a Visiting Professor in the Bartlett School of Planning at University College London and is a Design Council Built Environment Expert (BEE). Janice was on the Planning Committee of the London 2012 Olympic Games. She was a Senior Adviser on local government at DCLG 2000-2005, having been Chief Executive of Rutland CC, Director of Technical Services at Woking, and Professorial Head of the School of Planning and Landscape at Birmingham Polytechnic. Janice has been a trustee of the RTPI and TCPA and held several roles at the RTPI including Chair of Education and Life Long Learning Committee and the London Chapter. Janice has also been included in Planning's Power 100 list of planners.

Janice's recent books are *Modern Local Government* (2008 Sage) and *Effective Practice in Spatial Planning* (2010 Taylor and Francis) *How Europe Shapes British Public Policy* (2013 Policy Press), *Applying leadership and management in planning: theory and practice* (2015 Policy Press) and *Infrastructure delivery planning: an effective practice approach* (2016 Policy Press), *Beyond Brexit* (2017 Policy Press) and *Changing Contexts in Spatial Planning* (2018 Routledge). Her recent research with Dr Ben Clifford includes 2 projects on NSIP flexibility and delivery for NIPA and projects on Local Authority Direct Provision of Housing funded by the National Planning Forum and the RTPI that was published in December 2017. Janice and Ben are now working on an updating survey funded by GL Hearne that will be launched in December 2018 and some further housing research funded by the RTPI that will be published in 2019.

Robin Morphet

BSc MSc (Transp) MSc (Stat) MILT FRSS retMRTPI

Robin Morphet is an Honorary Professor at CASA. He founded *rmjm consulting* in 2003 following retirement from his position as Assistant Director for Information Management and Technology, London Regional Office, Department of Health. Prior to that he worked in Planning and Transportation with the GLC and London Boroughs, then as Head of Policy Analysis and Research in the London Borough of Hackney until 1991 when he joined the NHS as Regional Head of Information, SW Thames.

He holds degrees in Civil Engineering (B.Sc. University of Manchester.), Transportation and Environmental Planning (M.Sc. University of Birmingham) and Statistics (M.Sc. Birkbeck College). He is currently a member of the Institute of Logistics and Transport and a Fellow of the Royal Statistical Society. His research is concerned with the development of spatial interaction models and their relationship with the method's economic evaluation.

Contents

Authors
Contents
Foreword – Professor Michael Batty

Foreword

There are many initiatives being developed by government and the private sector which essentially are beginning to automate the work of local authorities and related agencies in terms of new information technologies. The landscape for the introduction of these new services and activities is complex and difficult to navigate. In this report, Janice Morphet and Robin Morphet lay out this landscape, providing a road map so that we can explore what is happening, first in general terms and then more specifically with respect to what is happening in the United Kingdom (UK).

What is fascinating about what they reveal is the plethora of initiatives, many overlapping each other in the same places, all inspired by a concern for delivering government more effectively to the people. A road map like this is essential if we are to get to grips with what is going on and in this report, the authors have painstakingly researched the terrain providing a catalogue of initiatives and their sources. Readers who want to explore this terrain for themselves will find that the report is meticulously sourced through references and web sites, thus providing as near a comprehensive resource as possible, given the rapidly shifting nature of this terrain.

This report is part of our project funded by the Macarthur Foundation dealing with Urban Informatics and the Smart City in terms of initiatives that are being developed in the UK. The smart city as the authors point out, is a much-overworked term and in some contexts, it is now being used to relate to all city activities. Indeed for many of those who have come to look at cities more recently, the smart city is the city. But here the authors make a very clear distinction between the development of new information technologies and the role of government and planning in traditional terms, showing how these new technologies are complementing as well as supplementing previous and present practices. The report also charts the complex organisation structure of government in the UK and the many new agencies that have been formed in the last twenty years as government has attempting to respond to an ever increasingly complex world which is being continually infused by new information technologies. The report makes the point that such complexity needs to be managed and although it stops short of providing a template for the future – for it is impossible to know how new information technologies will play out in practice due to the rapidity of their development – it does provide important markers for what this future will be like. It is one of the few reviews of a complex field that is forever changing.

Professor Michael Batty
Chairman, Centre for Advanced Spatial Analysis (CASA)
University College London (UCL)
18 August 2019
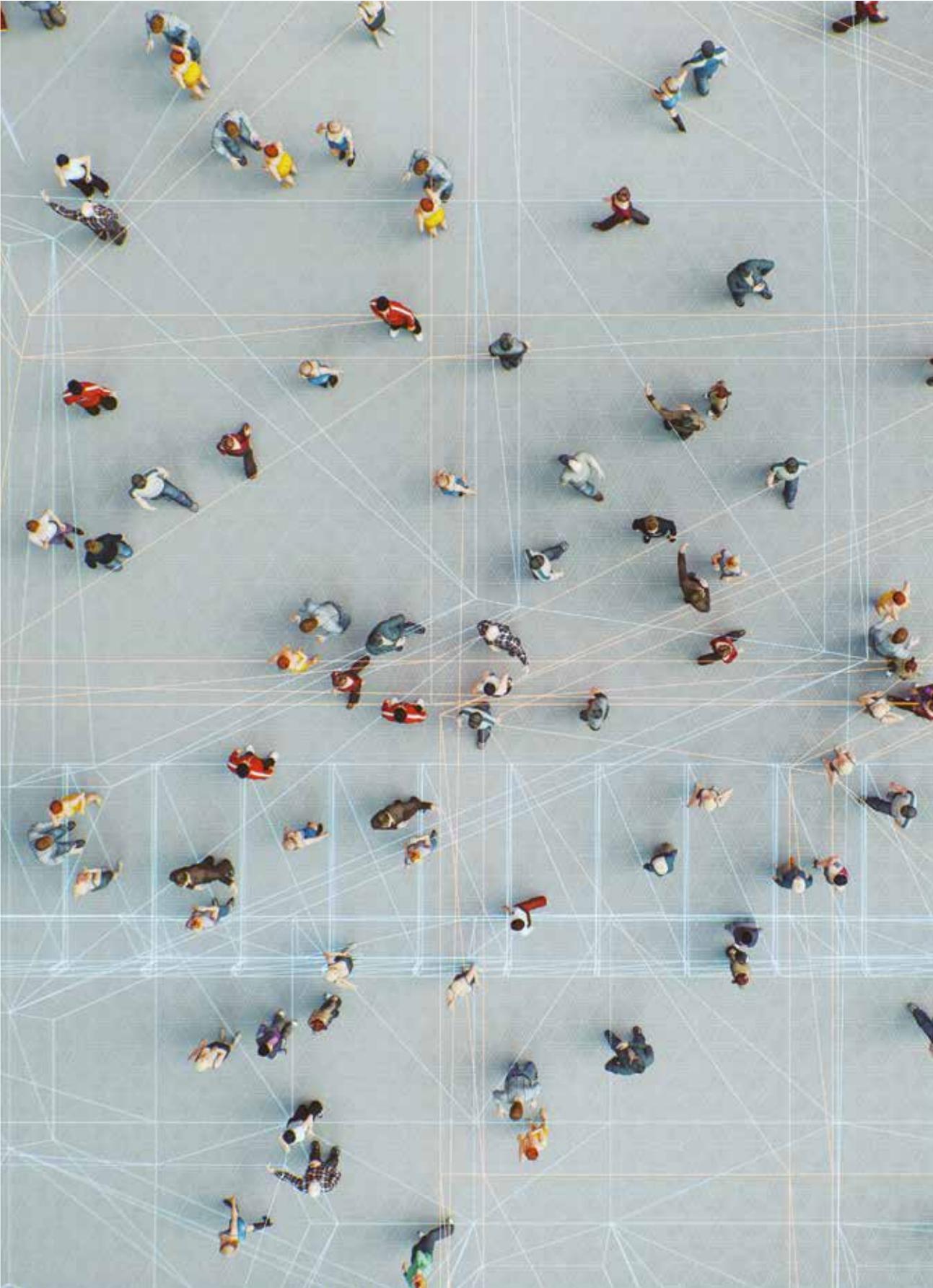
Chapter 1:
The role of the UCL Centre for Advanced Spatial Analysis (CASA)

Since its establishment, CASA's mission has been to develop urban analytics for understanding how cities work and how this understanding can be used to inform the various processes involved in urban planning, the location and allocation of different land uses, and in ways in which cities can produce more equitable and efficient distributions of income and social benefits. CASA and its researchers have engaged in international debates on the role and use of land and the systems that manage it effectively and efficiently. During the last 25 years since CASA was established which was roughly in the years when the world wide web – the internet – was being unleashed on an unsuspecting world and when the public at large first became aware of the prospect that everyone might be connected to everyone else digitally at any place and at any time, computers have continued to scale down to the point where they are now available to everyone, particularly as hand held devices where one is able to access the world's information at the touch of a key. The implications for these technological developments are dramatic and in terms of cities and their planning, this movement has come to be called the smart city. This is the background against which CASA's research and this report on the implications of these technologies for planning in government will be set.

When the MacArthur Foundation invited CASA to contribute to its research programme in 2015, there was a focus on the new urban analytics and smart cities and how this related to planning, managing and governing the city within the UK. CASA was asked to focus on the translation of new digital tools and technologies for practical applications in UK cities. This was in the period of preparation for the adoption of the UN's Sustainable Development Goals (SDGs) in 2016 including the key Goal 11 on the New Urban Agenda (NUA)[1]. The NUA has a specific focus on the ways that digital applications and urban analytics can support better city planning using smart city tools

not only to support change but also to monitor and compare progress between cities set within their wider functional economic areas (FEAs). This is through the development and application of smart city technologies to existing and growing cities across the world.

The MacArthur Foundation was particularly interested in the ways that these methods can support the planning, management and government of urban systems. It is an issue that is central to many international bodies including the World Bank (Duranton 2014[2]), the OECD (2018[3]) and the EU (CEC 2016[4]).

2016 was an important milestone for the UN and its SDGs. It was also the year of the UK's Brexit referendum since when there has been a major government focus on this issue almost to the exclusion of all else apart from the housing crisis, not unexpectedly after the Grenfell Tower fire in June 2017. This has meant that the UK government has not developed its approach to the NUA as much as some other nation states such as Australia[5] and Ireland[6] and the combined effort of the EU[7]. Thus, inevitably, knowledge of the NUA in the UK has developed less than elsewhere.

While much of the focus of the NUA is transnational, including new methods of comparative evaluation and bench marking, the timing of the MacArthur research project offers a major opportunity to provide an insight into the UK's current understanding and position on the issues that comprise the NUA. This review provides an opportunity to consider the ways in which digital methods and data analytics can support its delivery. As this report illustrates, the UK can start its work on the delivery of the NUA from a platform of existing experience and strength in the application of some approaches to citizen centric e-government. Further, the UK was named as the highest-ranking country in the UN for e-government in 2016 although it had slipped to fourth place by 2018[8].

---

[1] UN. 2017. New Urban Agenda. http://habitat3.org/wp-content/uploads/NUA-English-With-Index-1.pdf

[2] Duranton, G. 2014. Growing through Cities in Developing Countries. *World Bank Research* Observer 2015 30:1, 39-73.

[3] OECD. 2018. Opportunities for all: OECD Framework for Policy Action on Inclusive Growth. Policy Brief May.

[4] CEC 2016. Urban Agenda for the EU Pact of Amsterdam. Brussels: CEC.

[5] Standing Conference on the implementation of the NUA for the Asia Pacific Region https://www.nuaconference.com/about-the-standing-conference.html

[6] Irish Government 2018 National Spatial Strategy for Ireland http://www.irishspatialstrategy.ie/

[7] New Urban Agenda and the EU http://ec.europa.eu/regional_policy/en/policy/themes/urban-development/agenda/

[8] UN e-government survey 2018 https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018

In this report, the objectives, principles and implementation plan for the NUA, adopted in 2016, are examined and then these are used to provide a framework to review existing practice in the UK, its strengths and weaknesses. This will be illustrated throughout by specific examples of practice. It is hoped that the work reported here can contribute to UK and international thinking and practice in delivering the NUA.

How did CASA go about this research?

The approach to the research reported here is based on a blended method (Ritchie et al 2013[9]) that has included a range of techniques that have also contributed towards each other as the project has progressed. Initially a scoping report was prepared (Morphet and Morphet 2016[10]) and from this, some specific studies on country wide approaches to smart cities, urban analytics and the New Urban Agenda were undertaken. Following this, a UK wide workshop was held to develop a greater understanding of where the thinking on the relationship between the NUA and planning had reached within the UK based both on key speaker contributions and workshop discussions between leading academics and practitioners. This workshop helped to develop the programme for the main research conference held in November 2017. This was held over two days and included both international keynote speakers and snapshots of major new research on urban analytics that could be expected to contribute towards the delivery of the NUA in the UK.

As a follow up to the conference, the research project has also held a practitioner workshop with the public sector SOCiety of IT Managers (SOCITM) to understand what the key planning, management and government issues will be in the implementation of the NUA at different government scales in the UK. Following this, the discussion and findings from the events and country reviews has been brought together in this report together with desk research of specific examples currently in practice. It is also important to note that while the UK has not been focusing directly on the NUA in an overt way, there has been a revision of planning guidance in England launched by the UK Prime Minister in February 2018[11] and this report will also discuss where there is alignment between this new planning approach and the NUA. The report concludes with some findings, recommendations and proposals for new areas of research.

---

[9] Ritchie, J., Lewis, J., Nicholls, C. M., & Ormston, R. (Eds.). (2013). *Qualitative research practice: A guide for social science students and researchers*. Sage.

[10] Morphet J. and Morphet R. (2016) Scoping Report.

[11] Revised National Planning Policy Framework 2018 https://www.gov.UK/government/collections/revised-national-planning-policy-framework
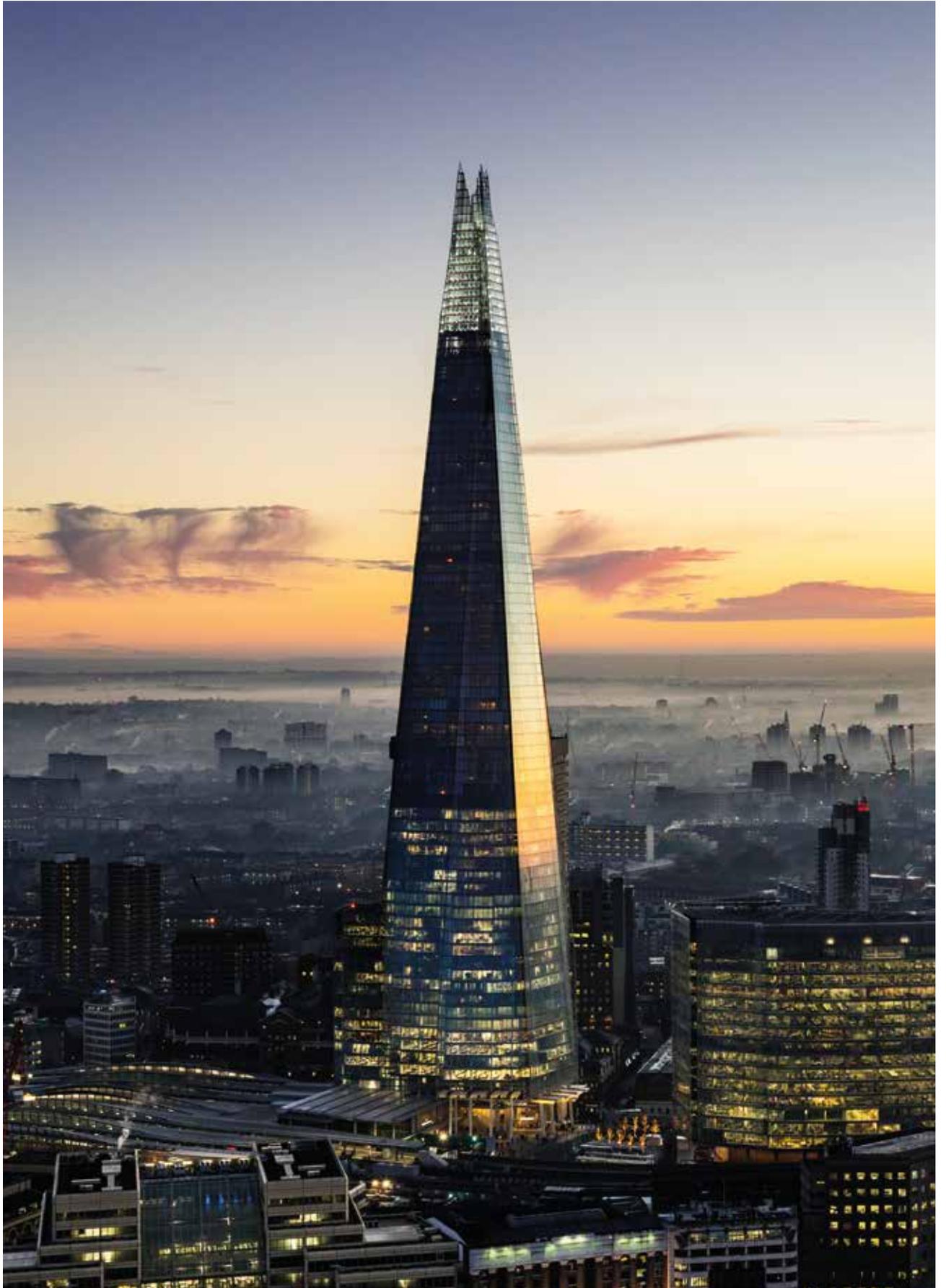
The Context

Chapter 2:
Context
MacArthur Foundation: Cities, Information and Governance Programme

In 2014, the MacArthur Foundation launched a programme to explore 'new ways of understanding the complex and interconnected challenges faced by cities around the world, from violence to climate change, and new ways to plan, manage, and govern to address them'[12]. The programme aimed to 'help identify new research, institutions, and interventions that may help urban practitioners and policymakers make better-informed decisions to improve the lives of urban residents, reduce environmental harm, and address other social issues'. The focus of this work on cities is in recognition that a growing number of the world's population live in cities so that planning and managing cities will be a significant challenge as the populations grow. In fact by the end of this century most people will be living in cities and thus, the focus of the programme has been on ways to improve decision making for planning, managing and governing cities.

The UCL CASA project commenced a little later than many of the other projects in this programme so it is possible to examine and utilise many of the findings on these three issues from the other research projects in the programme. These are summarised below and have created a context for this project which is exemplified through the City of Chicago:

Example 1: The City of Chicago

Planning cities

Monitoring and responding to change: the City of Chicago[13] has started to use its open data to examine how change is occurring and then using this to plan for the future

Managing cities

Predictive analytics: The City of Chicago[14] decided to move its data sets into an open source and establish them in ways that, where possible they update through processes. The predictive process includes an analysis of what is known now together with more traditional approaches[15]

Governing cities

Data driven government: Harvard University in its Data Smart City Solutions programme has been developing its analytics excellence road map. In describing the need for this approach, programme director Jane Wiseman stated, *"Where does data-driven government begin? With timely, reliable, consistent, high-quality data."* The Mayor of Somerville MA, Joe Curtatone, says that governing without data is like *"driving a car blindfolded."* Improving the quality of data collected, and the ease of accessing and analyzing the data, takes the blindfolds off.'[16]

Metadata: the city of Chicago has developed a meta data dictionary so that policies can be made based on information that is relevant for decision making not just in service groupings; it also requires that all data in external contracts is owned by the city

City Data Portal: the City of Chicago[17] data portal provides an opportunity to access transparent data about many facets of city life including health, service access, libraries, permits, map sharing in open grids.

---

[12] https://www.macfound.org/press/article/what-were-exploring-cities-information-and-governance/
[13] http://chicagopolicyreview.org/2013/10/14/unleashing-the-power-of-data-for-the-city-of-chicago/
[14] ibid
[15] https://data.cityofchicago.org/
[16] https://datasmart.ash.harvard.edu/news/article/analytics-excellence-roadmap-866
[17] https://data.cityofchicago.org/

Key issues and lessons learned from the MacArthur projects

The MacArthur project included several exemplar cities that are shown in Table 1.1. In reviewing the projects that have been included within the MacArthur Research, several lessons for the successful use of data analytics and digital methods in planning, managing and governing the city have emerged and can be summarised as follows:

- system architecture is critical[18]

- sustainability – how do you keep data input up to date and how do you manage automatic input of data from process?

- there is institutional fear of data collection and analysis

- how does data capture become part of the day to day operations?

- what is the bare minimum of activity in data collection and analysis to be successful?

- political support and leadership – how important is it?

- these approaches take time to deliver e.g. City of New York CompStat

Table 1.1: Key exemplar cities mentioned in MacArthur programme studies

City of Chicago – data warehouse

City of San Francisco – each department has a data coordinator

City of Los Angeles – city mapping tool Geohub[19]

City of Boston – open data portal Analyze Boston[20] and budget app including capital projects[21]

City of New Orleans – developed predictive analytics algorithm for those homes most susceptible to fire fatalities but least likely to have smoke detectors

City of New York – established CompStat but it has taken time

[18] http://beyondtransparency.org/chapters/part-1/open-data-in-chicago-game-on

[19] http://geohub.lacity.org/

[20] https://data.boston.gov/

[21] https://budget.data.cityofboston.gov/#/8

The Metrolab network of 35 city-university partnerships is focused on bringing data analytics to city government. The intention is to partner researchers with policy makers and is part of the US smart cities initiative. The city university partnerships are shown in table 1.2.

Table 1.2: **Metrolab city university partnerships.** [22, 23]

- Arlington County – Virginia Tech-National Capital Region

- City of Atlanta – Georgia Institute of Technology, Georgia State University

- City of Austin – University of Texas at Austin

- City of Baltimore – Johns Hopkins University, University of Baltimore

- City of Boston – Boston Area Research Initiative

- City of Boulder, City of Denver – University of Colorado-Boulder

- City of Burlington – University of Vermont

- City of Chattanooga – University of Tennessee at Chattanooga

- City of Charlotte – University of North Carolina at Charlotte

- City of Chicago – The University of Chicago

- City of Columbus – Ohio State University

- Cuyahoga County, OH – Case Western Reserve University, Cleveland State University

- City of Dallas – Texas Research Alliance

- City of Detroit – Wayne State University

- District of Columbia – Georgetown University, George Washington University, Howard University

- City of Gainesville – University of Florida

- Guilford County – University of North Carolina at Greensboro

- City of Houston – Rice University

- City of Jacksonville – University of Florida, University of North Florida

- City of Kansas City, MO, City of Kansas City, KS – University of Missouri-Kansas City, University of Kansas

- City of Los Angeles – California State University, Los Angeles

- City of Madison – University of Wisconsin-Madison

- City of Memphis – University of Memphis

- Greater Miami and the Beaches – University of Miami, Florida International University, Miami Dade College

- City of Minneapolis, City of Saint Paul – University of Minnesota

- Montgomery County, MD – University of Maryland, Universities at Shady Grove

- Metropolitan Government of Nashville and Davidson County – Vanderbilt University

- City of New York – New York University, Columbia University

- City of Newark – New Jersey Institute of Technology

- City of Orlando – University of Central Florida

- City of Philadelphia – Drexel University, University of Pennsylvania

- City of Pittsburgh – Carnegie Mellon University, University of Pittsburgh

- City of Portland – Portland State University

- City of Providence – Brown University, College Unbound, Rhode Island School of Design

- City of Raleigh – North Carolina State University

- City of San Diego – University of California San Diego

- City of San Francisco – University of California, Berkeley

- City of San Jose – San Jose State University

- City of Santa Fe – Santa Fe Institute

- City of Schenectady – University at Albany, SUNY

- City of Seattle – University of Washington

- City of South Bend – University of Notre Dame

- City of Tampa – University of South Florida

- City of Wilmington – University of Delaware, Delaware State University

---

[22] Specific projects here https://metrolabnetwork.org/projects/;
[23] https://datasmart.ash.harvard.edu/news/article/analytics-excellence-roadmap-866

The MacArthur CASA project

In this report, that contributes to the wider CASA MacArthur project, the focus has been on reviewing the status and extent of the use of data analytics and smart tools in UK local government in the context of the objectives, principles and implementation of the NUA. As noted earlier, the UK's ranking in the UN league table for countries offering services through e-government is high. This achievement is based on over twenty years of investment and development at the local level within an even longer tradition that goes back many years to when computers were first used in local government in the 1950s. This report reviews some of the ways in which e-government tools have been developed and provides examples of how they are made available to individuals, companies and communities in practice. This progress is reviewed within the three main themes of this research, that is, in planning, management and government.

The overall approach in UK local government has differed from that in the US examples. In the UK, there has been a strong focus on e-enabling customer facing services whether making or viewing a planning application, requesting a parking permit or registering for a school place[24]. This citizen focus has extended to the creation of citizen accounts in some local authority areas where it is possible to offer push services to users where access to services is based on information supplied from within their own account.

In comparison with the US, there has been less focus on capturing data from online processes to create evidence of use and take up, although this has occurred in some types of service where policy prediction based on process data is emerging. There are also fewer big data stores than in US cities and those that exist, for example in London[25], Leeds[26], Bristol[27] and Glasgow[28], are more focused on offering open data sets for public use rather than in using these data stores to inform decision making by city leaders and managers. The government of large urban areas has also been fragmented with transport, health, economic regeneration, environmental resilience and planning all operated within separate legal frameworks and government regimes. Since 2016, the introduction of directly elected mayors for some larger city regions has started to bring some of these powers together[29], but even in London where a Mayor was first elected in 2000 and where there are the most devolved powers for transport, regeneration, emergency services and strategic planning, there is still a limit on the powers that have been devolved[30].

In Scotland, Wales and Northern Ireland, where there are devolved governments, progress on E-enabling public services and data sharing has progressed further, particularly in Scotland. Here there is a citizen account and spatial data systems available across the whole of Scotland's territory and available between scales of government[31], both horizontally and vertically. This progress has been the result of considerable effort on joint working in Scotland since devolution and in some areas is more systematic and more fully developed than other parts of the UK.

Despite devolution, across the UK, sub-state government is still very centralised and, according to the OECD, the level of devolved decision making over expenditure has reduced between 1995 and 2014. If there is to be more effective and efficient integration of services and investment at a strategic level within these functional economic areas – urban or urban/rural, through the role of the new elected mayors, then there will need to be a greater integration of evidence and data analytics to engage infrastructure[32]. These big data sources can strengthen business innovation to support local needs. It can also provide the means of supporting more resilient cities when there are unexpected events.

The greatest challenges in supporting the delivery of the NUA by using evidence from urban analytics to support policy priority decisions will be complex and include the following:

- The **cultural** challenge of recognizing the need for evidence to be brought together in a meaningful way

- The **institutional** challenge of recognizing the role of evidence and data analytics in decision making as part of evidence-based policy making

- The **data** challenge in aligning data sources and frameworks derived from a range of systems that may be open source, bespoke or from the community, in a repository that can be used by government, the community, stakeholders and individuals.

The challenges identified in this report relate to taking forward this strategic agenda as more of the UK translates new digital tools and technologies into practical operational applications for cities.

24 https://www.local.gov.UK/sites/default/files/documents/transforming-public-servi-80e.pdf
25 https://data.london.gov.UK/
26 https://datamillnorth.org/
27 https://www.bristolisopen.com/
28 http://futurecity.glasgow.gov.UK/data/
29 Sandford, M. (2016). House of Commons Library Devolution to local government in England. *Briefing paper*, 7029.
30 Sandford, M. (2017). Local government in England: structures. *House Commons Library London*.
31 http://www.improvementservice.org.UK/digital-public-services.html
32 https://www.nic.org.UK/publications/next-steps-for-cities-a-new-joint-work-programme-on-ambitious-effective-plans-for-urban-infrastructure/

Chapter 3:
Context
The role of the New Urban Agenda for planning, managing and governing cities

Introduction

The adoption of the UN's Sustainable Development Goals (SDGs) in 2016[33] are expected to have a significant influence on the planning, management and government of cities in the future. The adoption of sustainable goals at the UN Earth Summit in 1992[34] has had an impact in reducing the use of fossil fuels including petrol, shifting towards public transport, more compact development and planning for climate change through the support for more resilient places[35]. It also introduced Local Agenda 21 that ensured that the roles of communities and local authorities were also recognised[36].

While all the SDGs are important in the context of planning, as illustrated by the National Spatial Plan for Ireland (2018)[37], there is also a focus on SDG 11 which established the context for the creation of the New Urban Agenda (NUA) at the Habitat lll meeting in Quito in 2016[38]. Through the NUA, the UN is supporting a paradigm shift to create "safe, resilient, sustainable and inclusive cities". The World Urban Forum event in Kuala Lumpur in Feb 2018 was designed to start developing the ways in which the NUA can be localised and taken up by local authorities. At this event, the World Bank identified some specific issues that needed support for urban areas including infrastructure investment and increasing resilience against climate change[39].

The new focus on safe and resilient cities added to previous principles for sustainable and inclusive cities is influencing the consideration of the way that the NUA is being implemented. Firstly, the NUA will be used to guide policy and delivery in all countries of the world that are members of the UN, rather than only in less developed countries that were the focus of the previous programme of Millennium Development Goals[40].

Secondly, the NUA is seeking to identify how cities can be measured in their progress in reaching the NUA goals through a system of benchmarking[41] that will also assist cities in prioritising policy areas where they may be weaker. There is also a greater focus on measurement and bench-marking of different conditions and outcomes to encourage all cities and urban areas to meet at least a baseline standard. Thirdly, the UN is being supported in the delivery of these objectives through other international groups such as the OECD[42], the World Bank[43] and the EU[44] so that policy outcomes can be reinforced through grant regimes and other reporting methods. Finally, the NUA has a specific focus on safety and resilience which is also a critical component of responding to climate change through the Paris accord (2016)[45].

33 https://sustainabledevelopment.un.org/?menu=1300

34 http://www.un.org/geninfo/bp/enviro.html

35 Wynberg, R. (2002). A decade of biodiversity conservation and use in South Africa: tracking progress from the Rio Earth Summit to the Johannesburg World Summit on Sustainable Development. *South African Journal of Science*, 98(5-6), 233-243.; Lafferty, W. M., & Eckerberg, K. (2013). *From the Earth Summit to Local Agenda 21: working towards sustainable development*. Routledge;

36 https://sustainabledevelopment.un.org/outcomedocuments/agenda21 ; Tuxworth, B. (1996). From environment to sustainability: surveys and analysis of Local Agenda 21 process development in UK local authorities. *Local Environment*, 1(3), 277-297.

37 Irish Government (2018) National Spatial Strategy, Dublin http://www.irishspatialstrategy.ie/

38 UN 2016 New Urban Agenda Habitat lll Quito http://habitat3.org/wp-content/uploads/NUA-English.pdf

39 World Bank 2018 http://www.worldbank.org/en/news/immersive-story/2018/01/31/3-big-ideas-to-achieve-sustainable-cities-and-communities

40 http://www.un.org/millenniumgoals/

41 UN 2017 Building Sustainability Assessment and Benchmarking. https://unhabitat.org/books/building-sustainability-assessment-and-benchmarking/

42 OECD New Urban Agenda policies, research and actions http://www.oecd.org/gov/habitat-3-and-a-new-urban-agenda.htm

43 World Bank 2018 New "Urban Sustainability Framework" Guides Cities Towards a Greener Future. 2018 https://www.worldbank.org/en/news/press-release/2018/02/10/new-urban-sustainability-framework-guides-cities-towards-a-greener-future

44 EU and the Urban Agenda http://ec.europa.eu/regional_policy/en/policy/themes/urban-development/agenda/

45 Un 2017 Urban Action on Climate Change: Linkages between SDGs, Paris Agreement & New Urban Agenda. http://www.europarl.europa.eu/cmsdata/124169/REGI_2017.06.19_3._R.Tuts_Urban%20Action%20on%20Climate%20Change%20Linkages_UN-Habitat.pdf

What does the NUA say about planning, managing and governing cities?

The focus of this Macarthur Programme

As noted in chapter 1, the MacArthur programme, in which this project is located, focuses particularly at the role of new data analytics and smart city digital tools to support the ways in which cities are planned, managed and governed within their contexts. The leads to a focus on the wider linkages between cities and their hinterlands, sometimes known as functional economic areas (FEAs)[46], and how there may be improvements in their planning, management and government that could help these areas jointly to be more efficient and effective. Cities are the locations of most of the world's economic activity[47] and their economic success is acting as a magnet for people to live in them[48]. This puts pressure on land that is available, infrastructure and on cross-boundary government across cities and their neighbours, not least as populations are rising across the whole of these growing FEAs, leading to urban sprawl.

What are the NUA objectives for cities?

The New Urban Agenda agreement on the way in which cities can contribute to meeting the UN's Sustainable Development Goals (SDGs) agreed in 2016, has an overarching objective which is set out in its foreword:

> The New Urban Agenda represents a shared vision for a better and more sustainable future – one in which all people have equal rights and access to the benefits and opportunities that cities can offer, and in which the international community reconsiders the urban systems and physical form of our urban spaces to achieve this. (UN NUA 2016 p iv [50]).

The fundamental premise of the NUA is that cities are not the causes of problems but can be a major instrument of change and improvement through a range of solutions. However, rather than relying on policy objectives alone, the NUA is embracing a more scientific approach to change, using evidence-based policy making[51]. The meeting of UN Habitat III in Quito, to discuss how to progress the NUA, adopted both a declaration and an approach to action. The Declaration is a UN resolution on sustainable cities and human settlements for all and was accompanied by an implementation plan to move the declaration into action. The declaration identified the role of planning, finance, management, government, design and development to achieve these ends (para 5). The objectives for cities as set out in the NUA declaration are shown in Box 3.1.

---

[46] Fox, K. A., & Kumar, T. K. (1965). The functional economic area: Delineation and implications for economic analysis and policy. Papers in Regional Science, 15(1), 57-85; Berry, B. J. L. (1967). Functional Economic Areas and Consolidated Urban Regions of the US. Final Report of the Social Sciences Research Council Study of Metropolitan Area Classification. Social Sciences Research Council, New York; Fujita, M., Krugman, P. R., & Venables, A. J. (2001). *The spatial economy: Cities, regions, and international trade*. MIT press. Krugman, P. (1998). What's new about the new economic geography?. Oxford review of economic policy, 14(2), 7-17. Karlsson, C., & Olsson, M. (2015). *Functional Economic Regions, Accessibility and Regional Development* (No. 415). Royal Institute of Technology, CESIS-Centre of Excellence for Science and Innovation Studies.

[47] Sassen, S. (2011). *Cities in a world economy*. Sage Publications

[48] Glick Schiller, N., & Caglar, A. (2010). *Locating migration: Rescaling cities and migrants*. Cornell University Press; OECD city growth http://www.oecd.org/cfe/regional-policy/future-cities.htm

[49] OECD (2018), *Rethinking Urban Sprawl: Moving Towards Sustainable Cities*, OECD Publishing, Paris, https://doi.org/10.1787/9789264189881-en.

[50] UN New Urban Agenda 2016 http://habitat3.org/wp-content/uploads/NUA-English.pdf https://unhabitat.org/books/international-guidelines-on-urban-and-territorial-planning

[51] Caprotti, F., Cowley, R., Datta, A., Broto, V. C., Gao, E., Georgeson, L., ... & Joss, S. (2017). The New Urban Agenda: key opportunities and challenges for policy and practice. *Urban research & practice*, 10(3), 367-378.

Box 3.1: UN NUA objectives for cities

(a) Fulfil their social function, including the social and ecological function of land, with a view to progressively achieving the full realization of the right to adequate housing as a component of the right to an adequate standard of living, without discrimination, universal access to safe and affordable drinking water and sanitation, as well as equal access for all to public goods and quality services in areas such as food security and nutrition, health, education, infrastructure, mobility and transportation, energy, air quality and livelihoods;

(b) Promote participatory and civic engagement, engender a sense of belonging and ownership among all their inhabitants, prioritize safe, inclusive, accessible, green and quality public spaces that are friendly for families, enhance social and intergenerational interactions, cultural expressions and political participation, as appropriate, and foster social cohesion, inclusion and safety in peaceful and pluralistic societies, where the needs of all inhabitants are met, recognizing the specific needs of those in vulnerable situations;

(c) Achieve gender equality and empower all women and girls by ensuring women's full and effective participation and equal rights in all fields and in leadership at all levels of decision making, by ensuring decent work and equal pay for equal work, or work of equal value, for all women and by preventing and eliminating all forms of discrimination, violence and harassment against women and girls in private and public spaces;

(d) Meet the challenges and opportunities of present and future sustained, inclusive and sustainable economic growth, leveraging urbanization for structural transformation, high productivity, value-added activities and resource efficiency, harnessing local economies and taking note of the contribution of the informal economy while supporting a sustainable transition to the formal economy;

(e) Fulfil their territorial functions across administrative boundaries and act as hubs and drivers for balanced, sustainable and integrated urban and territorial development at all levels;

(f) Promote age- and gender-responsive planning and investment for sustainable, safe and accessible urban mobility for all and resource-efficient transport systems for passengers and freight, effectively linking people, places, goods, services and economic opportunities;

(g) Adopt and implement disaster risk reduction and management, reduce vulnerability, build resilience and responsiveness to natural and human-made hazards and foster mitigation of and adaptation to climate change;

(h) Protect, conserve, restore and promote their ecosystems, water, natural habitats and biodiversity, minimize their environmental impact and change to sustainable consumption and production patterns.

Source UN NUA para 13.

The NUA goes on to state that all tiers and scales of government are important in the delivery of the NUA. These scales of government need the tools that they can use to implement the changes that may be needed through planning, management and government of city areas. In this, the NUA Declaration commits to seeking to strengthen the ability of local institutions of government and stakeholders to make change (para 47). The Declaration identifies the role of territorial planning for economic, social and environmental management as offering a key set of tools in achieving these ends (para 49). To do this, the NUA promotes the strengthening of subnational governments and the role of planning at this level (para 90). It also states that the roles of subnational governments should be focused on multi-level governance in both vertical and horizontal relationships within and between different scales of government and those involved in the management and delivery of policy and services across FEAs (para 90). There is a recognition that settlements of all sizes have a contribution to make whether these are within polycentric or single city FEAs. The role of rural areas as part of these FEAs and policies is also regarded as significant (para 96).

The approach to achieving the Declaration's objectives using territorial planning includes all types of development and investment tools including affordable housing, infrastructure and environmental resilience, with the objective of improving social inclusion and cohesion (para 106). Further, the NUA supports the expansion of local funding mechanisms including the powers to raise revenue to support the delivery of the NUA at the local level in ways that are targeted at achieving local change (paras 134, 139). There is finally a commitment to following up the declaration and implementation plan through monitoring and other means on a four-year reporting cycle by the UN (para 166).

The role of planning the city in the NUA

The NUA has planning as one of its primary means of achieving its objectives for cities. In promoting the role of planning standards and codes, it is taking a more scientific approach to city policy. The NUA describes this approach as a *paradigm shift* (UN 2017 p iv). The NUA also envisages that much of the delivery of this shift will be through e-government methods, information and communication technologies and geospatial information management (ibid).

The NUA states its commitment to:

> Reinvigorating long-term and integrated urban and territorial planning and design to optimize the spatial dimension of the urban form and deliver the positive outcomes of urbanization; (UN 2017 para 15).

The practices of urban planning are also seen as required components of delivering more specific policies in the NUA including those for housing (para 31).

The NUA is also concerned with the way in which planning is practised particularly through its commitment to community engagement in decision-making and in co-production (paras 41, 81). The NUA is also committed to promoting links between urban and rural areas through planning practices and procedures which can also promote territorial cohesion[52] which should include communication and transport between them (para 50). The NUA commits to the preparation of urban spatial frameworks that will support the efficient use of natural resources and the benefits of urban agglomeration (para 51) that will lead to urban strategies[53]. The approach proposed for these urban strategies is set out in Box 3.2.

Box 3.2: **NUA approach to urban strategies**

We encourage spatial development strategies that consider, as appropriate, the need to guide urban extension, prioritizing urban renewal by planning for the provision of accessible and well-connected infrastructure and services, sustainable population densities and compact design and integration of new neighbourhoods into the urban fabric, preventing urban sprawl and marginalization.

Source: NUA (UN 2017) para 52

The NUA also identifies the specific services and standards that need to be considered when undertaking these urban strategies and territorial planning as shown in Box 3.3. The NUA takes a strong approach to managing urban resilience through the provision of infrastructure and basic services (para 65).

Box 3.3: **specific services identified as part of the planning process by the NUA**

Accessible and green spaces (para 52)
Quality of life (para 65)
Risk mitigation for disaster planning (para 65)
Wellbeing (para 65)
Economic growth (para 65)
Food security (para 68)
Eco system services (para 68)
water resources (para 72)
Climate adaptation (para 80)
Sustainable mobility (para 113)

Source: UN NUA

---

[52] http://ec.europa.eu/regional_policy/en/policy/what/territorial-cohesion/
[53] https://www.rtpi.org.UK/briefing-room/rtpi-blog/a-planning-perspective-on-the-new-urban-agenda/

In addressing the specific spatial plans identified in the International Guidelines for Urban and Territorial Planning, the NUA offers approaches for different spatial scales. The NUA promotes the use of territorial plans between urban and rural areas and for city-regions (para 92). For strategic planning that includes the relationships between urban and rural areas, to be achieved through inter-municipal cooperation (para 96). This cooperation is expected to be based on functional economic areas (FEAs), sometimes known as Functional Urban Areas. The OECD and the EU have agreed on a joint definition[54] and the OECD has also undertaken a review of the location of these FEAs within its own members[55]. These scales are shown in Box 3.4.

The NUA is also committed to the integration between different sectors (paras 88/93) that is also part of the International Guidelines on Urban and Territorial Planning (UN 2015[56]). These set out a series of actions for the organization of urban and territorial planning within each state including the scales at which different but complementary plans are made. It is expected that the plans to be made use the three key principles that are shown in Box 3.5.

Box 3.4: **Urban and Territorial Planning Scales – plans and strategies**

Government Scale	Plans and strategies
Supra national and transboundary	Multinational regional plans
National level	National plans for major infrastructure, corridors, river basins, balance between towns and cities
City region and metropolitan level	Subnational regional plans for economic development, agglomeration, urban and rural linkages, adaptation to climate change, social and spatial disparities, territorial cohesion in growing and declining areas
City and municipal level	Integrated development plans and land use strategies; land markets; urban infill and extensions, increase in residential density; promotion of more socially integrated communities
Neighbourhood level	Participatory planning and budgeting; plans for public spaces, improving urban quality

Source: UN 2015 International Guidelines on Urban and Territorial Planning

---

54 OECD 2011 Definition of Functional Urban Areas for OECD and EU https://www.oecd.org/cfe/regional-policy/Definition-of-Functional-Urban-Areas-for-the-OECD-metropolitan-database.pdf

55 http://www.oecd.org/cfe/regional-policy/functionalurbanareasbycountry.htm

56 UN 2015 International Guidelines on Urban and Territorial Planning https://unhabitat.org/books/international-guidelines-on-urban-and-territorial-planning/

This strategic approach set out in the NUA also includes support for urban extensions (para 98) to prevent urban sprawl. There is also an emphasis on the better use of public transport and urban sustainability (para 113). All of this is expected to be achieved through plans, codes and regulations that will apply to development within strategic development policies. This is also expected to include land polices and regulation including the capture of land value increments (para 137). Box 3.6 sets out the key components of the NUA that relate to territorial and spatial matters.

Box 3.6: UN NUA territorial and spatial planning (extracted summary)

43. sustained, inclusive, and sustainable **economic growth**.

44. **urban form, infrastructure, and building design**, benefits of economy of scale and agglomeration, and fostering energy efficiency, renewable energy, resilience, productivity, environmental protection, and sustainable growth in the urban economy.

45. **cultural heritage** and local resources, resource efficient and **resilient infrastructure**.

46. affordable and sustainable housing and housing finance.

47. strengthen national, sub-national, and local institutions to support **local economic development**, fostering integration, cooperation, coordination, and dialogue across levels of governments and functional areas and relevant stakeholders.

48. effective **participation and collaboration** among all relevant stakeholders.

49. **territorial systems** that integrate urban and rural functions into the national and subnational spatial frameworks and sustainable management and use of natural resources and land.

50. **urban-rural interactions and connectivity** by strengthening sustainable transport and mobility, technology and communication networks and infrastructure, underpinned by planning…including connectivity between cities and their surroundings, periurban, and rural areas, as well as greater land-sea connections, where appropriate.

51. development of **urban spatial frameworks**, including urban planning and design instruments that support sustainable management and use of natural resources and land, appropriate compactness and density, polycentrism, and mixed uses, through infill or planned urban extension strategies as applicable, to trigger economies of scale and agglomeration, strengthen food system planning, enhance resource efficiency, urban resilience, and environmental sustainability.

52. **urban extension** prioritizing urban renewal by planning for the provision of accessible and well-connected infrastructure and services, sustainable population densities, and compact design and integration of new neighbourhoods in the urban fabric, preventing urban sprawl and marginalization.

53. safe, inclusive, accessible, **green, and quality public spaces**.

54. **renewable and affordable energy** and sustainable and efficient transport infrastructure and services, where possible, achieving the benefits of connectivity and reducing the financial, environmental, and public health costs of inefficient mobility, congestion, air pollution, urban heat island effect, and noise.

55. access to adequate, inclusive, and quality **public services**.

56. increase economic **productivity**.

57. promote full and **productive employment**.

58. responsible **business environment**.

59. **informal economy**.

60. urban economies to progressively transition to **higher productivity** through high-value-added sectors.

61. **urban demographic dividend**.

62. social, economic, and spatial implications of **ageing populations**.

These approaches to urban and territorial planning included within the NUA address the ways in which planning can be undertaken at different spatial scales, what issues are most appropriately included at each scale and the principles that operate in undertaking these plans. In Chapter 8, the ways in which these approaches are being addressed and delivered in the UK are discussed, including the role of urban analytics and smart city techniques are helping to deliver these plans and strategies.

The role of managing the city in the NUA

The NUA sees the role of managing cities as being central to achieving their economic, social and environmental roles (p iv; para 5). This approach to management includes using efficiently what is already available through investment such as infrastructure and considering the role of urban management as a major contribution to making cities resilient and minimizing their vulnerabilities (para 13). This management approach is regarded as critical for both growing and shrinking cities (para 14). This management approach is also important in achievement of sustainable cities, for the use of natural resources, energy and environmental quality (paras 49; 71). This management is also seen to help cities to implement circular economies (para 71).

Management is also identified in the NUA as one of the principal means of implementing its agenda (para 81). This is particularly important, not only for the management of sectoral issues such as transport, waste and land but also the ways in which these can be brought together in a coherent way with the financial resources to deliver them (para 88). Attention is paid to the need to work across administrative boundaries (paras 88, 90). Working with communities and stakeholders to achieve these ends at all levels of government is identified as being central to a successful outcome (para 91).

The role of planning and managing urban spatial development is also addressed. The NUA supports integrated planning that can address both short term and longer-term needs. This relationship between planning and managing urban spatial development is captured in the text as shown in Box 3.7. The NUA also supports the development and training of those practicing planning, urban design and development skills (para 102).

Box 3.7: NUA: The ways in which the planning and managing of urban spatial development will be achieved

96. We will encourage the implementation of sustainable urban and territorial planning, including city-region and metropolitan plans, to encourage synergies and interactions among urban areas of all sizes and their peri-urban and rural surroundings, including those that are cross-border,and we will support the development of sustainable regional infrastructure projects that stimulate sustainable economic productivity, promoting equitable growth of regions across the urban-rural continuum. In this regard, we will promote urban-rural partnerships and inter-municipal cooperation mechanisms based on functional territories and urban areas as effective instruments for performing municipal and metropolitan administrative tasks, delivering public services and promoting both local and regional development.

97. We will promote planned urban extensions and infill, prioritizing renewal, regeneration and retrofitting of urban areas, as appropriate, including the upgrading of slums and informal settlements, providing high-quality buildings and public spaces, promoting integrated and participatory approaches involving all relevant stakeholders and inhabitants and avoiding spatial and socioeconomic segregation and gentrification, while preserving cultural heritage and preventing and containing urban sprawl.

98. We will promote integrated urban and territorial planning, including planned urban extensions based on the principles of equitable, efficient and sustainable use of land and natural resources, compactness, polycentrism, appropriate density and connectivity, and multiple use of space, as well as mixed social and economic uses in built-up areas, in order to prevent urban sprawl, reduce mobility challenges and needs and service delivery costs per capita and harness density and economies of scale and agglomeration, as appropriate.

NUA 2016

In reinforcing this relationship between managing and delivering urban spatial planning, the NUA identifies some specific types of data collection that supports the provision of housing and the use of land. This includes land and property registration and management, basic land inventory information and land and housing price records (para 104). The value of land is regarded as an important issue in the provision of affordable housing. The NUA also discusses the role of data collection and management for transport management and investment (para 116). There is also a concern to manage waste, water and coastal areas as part of this process. All of these, including managing the land market are defined as important planning management tools (para 137).

Managing the city for resilience is included in the NUA for both the need to mitigate environmental disasters and its role in supporting sustainability through ecosystem services (para 68). The role of retrofitting, restoration and regeneration as part of resilience is also identified (para 71). The NUA identifies the role of infrastructure and spatial planning as the main means to ensure and deliver resilience in cities (para 77). It also identifies and supports the role of public awareness in the development and delivery of resilience. In achieving delivery, the NUA identifies the role of regulation but also the need to monitor the delivery the supply of housing for different groups using reliable data that analyses not only demographic but social, cultural and economic dimensions of need (para 111).

The role of governing the city in the NUA

The NUA has a strong focus on the role of sub-national and local governments in the delivery of the outcomes for places that it is promoting. It takes the view that governments at all scales needs to be developed and strengthened with sound institutional mechanisms that empower stakeholders (para 15) to deliver sustainable development through the NUA. Governments have a role in the coordinated delivery of change ensuring property planning for resilience and management of disasters (para 29).

While the role of local authorities is an important feature of the NUA, there is also a focus on strategic planning and management through the partnership and cooperation between local authorities that comprise FEAs (paras 47, 96). This should also be carried through to effective implementation (para 81). The NUA is in favour of effective partnerships between all sectors and stakeholders (para 82) and partnering with communities (para 91). It also states that these partnerships should be between governments of all levels in a form of vertical integration between spatial scales (para 92).

The NUA is particularly committed to building and strengthening urban governance (paras 85-92) and as set out in Box 3.8. The NUA also supports evidence-based governance (para 159) using shared knowledge bases.

The role of data analytics and digital smart cities approaches in the NUA

One of the tools that has been identified to achieve the NUA objectives is the smart city approach as shown in Box 3.9. Through smart city approaches, including the role of big data, specific technologies for communicating with citizens and managing infrastructure, the UN expects that it will be easier to deliver some of the objectives adopted in the NUA.

The NUA also sets out some of the smart city methods that can support the delivery of its agenda. In considering managing disaster risk for example, the NUA states that mainstreamed holistic data management is an important tool that should be used (para 77). It also states that it is important to have basic information on land and priority, together with ownership and other social economic data to undertake appropriate planning at all scales (para 104) and that it is important that this data is disaggregated to all spatial scales so that it can be used by local communities and government (para 111). The NUA also states that there should be transparency n expenditure to achieve these ends (para 136). The NUA regards accessible data solutions as being an important component in achieving cooperation and consultative approaches to developing and implementing urban spatial planning (para 92).

In progressing the objectives of the NUA, the implementation plan requires regular monitoring of all signatories as set out in Box 23.10 in para 158:

The NUA suggests a variety FO ways in which this data driven, evidence-based approach can be addressed as shown in Box 3.11 below:

Box 3.10: NUA Data collection for achieving urban sustainability

158. We will strengthen data and statistical capacities at national, subnational and local levels to effectively monitor progress achieved in the implementation of sustainable urban development policies and strategies and to inform decision-making and appropriate reviews. Data collection procedures for the implementation of follow-up to and review of the New Urban Agenda should primarily be based on official national, subnational and local data sources, and other sources as appropriate, and be open, transparent and consistent with the purpose of respecting privacy rights and all human rights obligations and commitments. Progress towards a global people-based definition of cities and human settlements may support this work.

Source NUA

Box 3.11: NUA Digital approaches to evidence-based policy making

156. The use of digital platforms and tools, including geospatial information systems, will be encouraged to improve long-term integrated urban and territorial planning and design, land administration and management, and access to urban and metropolitan services.

160. We will foster the creation, promotion and enhancement of open, user-friendly and participatory data platforms using technological and social tools available to transfer and share knowledge among national, subnational and local governments and relevant stakeholders, including non-State actors and people, to enhance effective urban planning and management, efficiency and transparency through e-governance, approaches assisted by information and communications technologies, and geospatial information management.
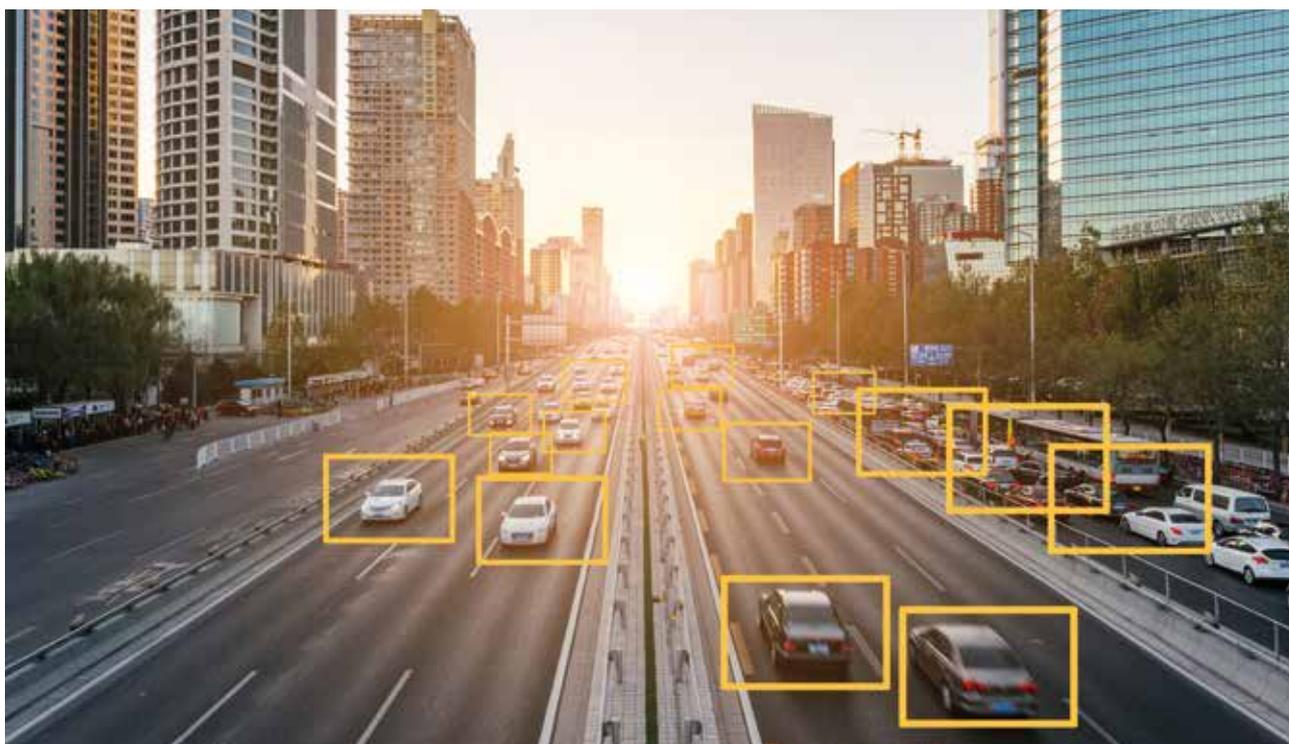
Implementing the NUA

One of the key concerns for policy makers in governments and in the EU is how the commitments made in adopting the SDGs can be implemented and delivered in practice. While there have been methods that have considered mainstreaming and the role of impact assessments in evaluating progress, Carbone and Keijzer(2016)[57] argue that these do not necessarily create enough focus and that these methods can be used in ways that do not support the delivery approaches required. In Finland it was also found that the role of indicators does not assist in delivery. As Yli-Vickari (2009)[58] stated 'Clearly, the informative value of the indicators has been overrated and the complexity of the information transfer has been underestimated' (p 891). In this case study in Finland, there was some disconnect between collecting data on the indicators and the relationship between the indicator and the policy it was intended to support. Further, there was also a greater connection between the data collection and management goals which may not have been so closely aligned with those of the sustainable policy.

However, they also recognise that the SDGs cover a wide range of issues and having more specific approaches can be difficult. As Duit et al (2016)[59] state, the role of the state in giving leadership on issues such as sustainability or the achievement of the SDGs is critical to their achievement and success. While the state cannot achieve everything on its own, nor can those operating within the state contribute to these outcomes if they are not highlighted and prioritised by the government. While statements by government ministers may provide a general context, governments will also need to provide specific support through their own practices or legislative frameworks to support outcomes. Further one of the key challenges in achieving this state leadership depends on the issue of integration between policies towards the same ends (Jordan and Lenschow 2010)[60].

The way that individual states respond to the SDGs as agreed through the UN will be within the context of international organizations such as the OECD and EU. While as Knill et al (2010)[61] demonstrate, there is a convergence in the framing of issues and approaches to their delivery by these organizations, there will still be divergences in practice. One of the key challenges in shaping and leading organizations to meet changing goals is the way in which finance and the use of assets can be bent towards these ends. In the OECD, there has been a focus on the use of blended finance methods for developing countries where an integrated approach to the use of finance to meet the SDGs has been taken. Within this approach, the use of data is considered a main means of assessing the outcomes of investment which largely steer away from specific and individual projects towards project programmes that assist through additionality. The OECD's approach is to used blend finance through its 'billions to trillions' approach and to align the SDGs with the commitments made in the climate accord.

The NUA will be implemented by UN members across the globe and the NUA objectives and priorities will be incorporated into domestic programmes and priorities. These will also need to include monitoring and methods to make policy adjustments where NUA objectives are not being met. The delivery of the NUA will also involve other stakeholders including business and the community/voluntary sector. For business, the World Economic Forum has identified three key areas where it considers that the NUA will be active to most effective in achieving its ends[62]. These are:

- Urban rules and regulations: to include strong urban regulation and development plans

- Urban planning and design: using territorial planning as a means of strengthening the benefits of urban form

- Municipal finance: using municipal finance systems to reinforce the NUA objectives

[57] Carbone, M., & Keijzer, N. (2016). The European Union and policy coherence for development: Reforms, results, resistance. *The European Journal of Development Research*, 28(1), 30-43.

[58] Yli-Viikari, A. (2009). Confusing messages of sustainability indicators. *Local environment*, 14(10), 891-903.

[59] Duit, A., Feindt, P. H., & Meadowcroft, J. (2016). Greening Leviathan: the rise of the environmental state?. *Environmental politics*, 25(1), 1-23.

[60] Jordan, A., & Lenschow, A. (2010). Environmental policy integration: a state of the art review. *Environmental policy and governance*, 20(3), 147-158.

[61] Knill, C., Debus, M., & Heichel, S. (2010). Do parties matter in internationalised policy areas? The impact of political parties on environmental policy outputs in 18 OECD countries, 1970–2000. *European journal of political research*, 49(3), 301-336.

[62] http://www3.weforum.org/docs/WEF_Harnessing_Public-Private_ Cooperation_to_Deliver_the_New_Urban_Agenda_2017.pdf

Monitoring the implementation of the NUA

The development of the criteria for monitoring the NUA within the EU is being developed by the EU and the OECD together. The OECD has been developing its approach to support all its members across the world to start measuring and comparing progress between a range of economic, social and environmental factors. They have also provided some discussion about definition and measurement of criteria[63] together with some initial wok on wellbeing indicators[64]. The OECD has also identified all the FEAs within its member states that are listed and available[65]. As part of its work in supporting the delivery of the NUA, the OECD has identified and linked its own policy work streams and activities with those within the NUA[66] that include planning, managing and governing the city. In planning the city, the OECD has placed a major emphasis on land, access to it, availability and capturing its value. In undertaking this task, the OECD has been undertaking a series of country reviews on the governance of land use and of spatial planning and policy. There has been no specific review of the governance and spatial planning policies within the UK although the UK system is discussed in both the overall review of the management of land use[67] and of spatial planning systems[68]. In the governance of land use paper, the OECD points to the evidence that demonstrates that there has been little urban densification in OECD countries and hence making more efficient use of land and infrastructure has some way to go in delivering the NUA.

The OECD has also created a wellbeing index for its members and created a web tool that enables users to compare their wellbeing with other locations[69]. The index comprises a range of factors including environment, jobs, civic engagement, access to services, housing and health. The web tool identifies other regions with similar levels of wellbeing and sets out the wellbeing factors in the region selected in more detail. Each of the indicators is also set within a comparative scale for all regions so that it is possible to identify if the region is doing well or badly in comparison with all other regions and within its own state.

In addition to specific guides on how to use the wellbeing index and web tool, it is also possible to download the data from the website.

The OECD has also undertaken a review of metropolitan governance across its members[70] with reference to the effective government of FEAs which is a critical governance scale in the NUA. The OECD identifies the issues related to non-binding arrangements between local authorities involved in managing and planning within any FEA and makes recommendations for how government might be changed to deliver a better and more effective system for each FEA. While recognising that having more coordinated governance arrangements across an FEA will not provide more effective outcomes automatically, it suggests that larger, more strategic projects, financing, service delivery can be compared between FEAs. The OECD has also emphasised that the delivery of the NUA in each member state is associated with the acceptance of a new form of national urban policy[71]. While this is undertaken by each state, the EU also has a leadership role for supporting its members to achieve the NUA objectives and a leading role in the implementation of the SDGs.

The EU will also be involved in ensuring, as far as possible, that the SDGs will be implemented. To progress the SDGs and the role of the NUA within them, the EU had adopted its own Urban Agenda[72] in Amsterdam 2016 and from this, the member states are now developing a range of specific activities and initiatives that can inform and support the progress of governments of all spatial scales in their delivery. The UN has acknowledged that the EU's UA will be the means of supporting implementation of the NUA within EU member states. There has also been discussion within the EU about how best they can support the delivery of the NUA[73]. One of the first practical actions has been the creation of the EU's Urban Data Platform[74] where cities, FEAs and metro regions are all offered as analytical scales. Within this, a range of variables about the city's social, economic, environmental and resource performance can be viewed and compared with other places within the EU.

63 http://www.oecd.org/regional/regional-policy/Definition-of-Functional-Urban-Areas-for-the-OECD-metropolitan-database.pdf

64 Brezzi, M. and M. Diaz Ramirez (2016), "Building subjective well-being indicators at the subnational level: A preliminary assessment in OECD regions", OECD Regional Development Working Papers, 2016/03, OECD Publishing, Paris https://www.oecd-ilibrary.org/docserver/5jm2hhcjftvh-en.pdf?expires=1537355553&id=id&accname=guest&checksum=04CC8060337856EAF5DC40F64499CDA2

65 http://www.oecd.org/cfe/regional-policy/functionalurbanareasbycountry.htm

66 http://www.oecd.org/gov/habitat-3-and-a-new-urban-agenda.htm

67 OECD (2017), *The Governance of Land Use in OECD Countries: Policy Analysis and Recommendations*, OECD Publishing, Paris, https://doi.org/10.1787/9789264268609-en.

68 OECD (2017), *Land-use Planning Systems in the OECD: Country Fact Sheets*, OECD Publishing, Paris, https://doi.org/10.1787/9789264268579-en https://www.oecregionalwellbeing.org/

69 https://www.oecregionalwellbeing.org/

70 OECD (2015), *Governing the City*, OECD Publishing, Paris, https://doi.org/10.1787/9789264226500-en.

71 http://www.oecd.org/regional/implementing-the-new-urban-agenda-through-national-urban-policy-ministerial-perspectives.htm

72 https://ec.europa.eu/futurium/en/urban-agenda

73 https://www.habitat.org/sites/default/files/EU%20Policy%20Discussion%2018012017_FINAL.pdf

74 http://urban.jrc.ec.europa.eu/?ind=popden&ru=fua&s=0&c=1&m=0&f=1&p=0&swLat=35.24561909420681&swLng=-49.130859375&neLat=60.108670463036&neLng=70.927734375

The approach in the UK

While the UK has committed to the achievement of the SDGs, the Environmental Audit Committee of the UK Parliament has found that it has taken no steps to implement the SDGs in the UK[75]. Rather the UK government sees its role in implementing these SDGs in other countries through its international development programme[76]. The Committee also found that there was little public awareness of the goals and or commitments to achieving them and recommended that there should be a public media campaign. Further it recommended that there should be an appointment of a Cabinet Minister responsible for achieving the SDGs and the preparation and publication of an implementation report that should be reviewed every three years. The Committee particularly addressed the role of local government in achieving these goals although the evidence taken was not from UK local government but rather the Commonwealth local government forum and the NHS.

While not appointing a Minster responsible for delivering the goals or preparing an action plan, the Government has focused the knowledge of the SDGs on the young[77]. The Prime Minister has requested ONS to report on the statistical indicator set which ONS assisted in developing at an international level. However, subsequently it appears that the role of the ONS has been scaled back as the Cabinet Office has decided to embed the goals within Departmental plans. The ONS has published the UK's reporting platform[78] and published its first report on progress in November 2017[79] where it states that the UK is one of the countries in a Task Force investigating and developing National Reporting Platforms (NRPs).

Conclusions

This review has demonstrated how the principles of the NUA have been included within the recent changes in national planning policy within England. Planning reforms are also underway in Scotland and Wales and it might be expected that the NUA will also provide ways of implementing NUA principles in practice. While these principles are in place, it is less certain how their effects will be managed and monitored to provide feedback for benchmarking. Also, it will be important to assess how far these principles are brought to the fore in the preparation of plans and the determination of individual applications for planning permission for development and the determination of planning decisions that are appealed to the Planning Inspectorate.

75 https://www.parliament.UK/business/committees/committees-a-z/
commons-select/environmental-audit-committee/news-parliament-
2017/-sustainable-development-goals-in-the-UK-follow-up-inquiry-
launch-17-19/ ; https://publications.parliament.UK/pa/cm201617/
cmselect/cmintdev/103/103.pdf

76 https://www.britishcouncil.org/sustainable-development-goals

77 https://www.parliament.UK/business/committees/committees-a-z/
commons-select/environmental-audit-committee/news-parliament-2017/
sustainable-development-goals-in-government-response-16-17/

78 https://www.ons.gov.UK/aboutus/whatwedo/programmesandprojects/
sustainabledevelopmentgoals?lang=welsh

79 https://www.ons.gov.UK/economy/environmentalaccounts/articles/
sustainabledevelopmentgoalstakingstockprogressandpossibilities/
november2017

Chapter 4:
Context
Context: e-government, smart cities and data analytics in the UK

Introduction

The UK Government has been in support of promoting smart, efficient and effective means of delivering government-led services since the early 1990s. This started with the introduction of competition for provision of services with a focus on the benefits that could be provided from the application of methods being used in the private sector[80]. This was then developed into a more coherent focus on e-government which combined the benefits of providing citizens and companies with easy access, online delivery methods at times that suited them with the reduction in transaction costs from face to face, to telephone and online. This programme has been followed by subsequent support for smart cities and increased online service delivery as a matter of everyday use. While there was initial concern about the digital divide. the wider use of smart phones and the increase in use of technology by older age groups[81] has also extended the reach of such services. These developments are outlined in more detail below.

While the government has supported this move towards smarter methods, this has also been within the context of its membership of the EU, to which it has both contributed priorities and in delivering jointly agreed programmes. The e-government programme 1999-2005 was encouraged by the EU public service priorities for ten key transactions to be available online. The development of smart cities and innovation hubs have been within the context of the EU's innovation programmes and smart specialisation[82], particularly since 2013. Other initiatives such as transport smart cards within the UK and driving license and health insurance cards[83] that are recognised across the EU have also been supported by EU initiatives. There are also EU wide initiatives for data standards and open data such as included in the INSPIRE directive[84]

on spatial data and mapping and associated programmes which have been implemented in the UK. Finally, the EU has introduced the General Data Protection Regulation (GDPR)[85] in EU law on data protection and privacy for all individuals within the European Union and the European Economic Area. It also addresses the export of personal data outside the EU and EEA areas. Failure to abide by the Regulation can result in significant fines for organizations.

In this section of the report there is a brief overview of the organisation of the scales of government in the UK before reviewing past progress in delivering services using digital, smart city and big data approaches. The following sections of the report will review current initiatives that are supporting planning, managing and governing cities and FEAs in the UK and how these are contributing to the delivery of the NUA.

Government organization in the UK

The scales at which Government operates within the UK were changed in the late 1990s when devolution of central power was introduced in Scotland, Wales and Northern Ireland together with London. While Scotland, Wales and Northern Ireland all have devolved powers with directly elected bodies to exercise these, these powers are also different between the nations and, within them, local authorities. Central government powers in Scotland, Wales and Northern Ireland have also been further devolved to local and neighbourhood/community councils. Where there are commitments to implement EU Programmes, the devolution settlement has meant that it is for each nation to determine the means and methods, unless these have been specific as part of an EU regulation. Otherwise, the choice of method is a central component of devolved decision making. While there has been clarity of jurisdiction on many of the services being offered using

---

80 Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006). New public management is dead—long live digital-era governance. *Journal of public administration research and theory*, 16(3), 467-494.

81 https://www.ofcom.org.UK/about-ofcom/latest/features-and-news/rise-social-seniors

82 http://s3platform.jrc.ec.europa.eu/

83 https://www.nhs.UK/using-the-nhs/healthcare-abroad/apply-for-a-free-ehic-european-health-insurance-card/

84 https://data.gov.UK/location/inspire

85 https://gdpr-info.eu/

e-government methods, these distinctions have latterly become blurred with central government's direct involvement in city deals and discussions about potential post-Brexit arrangements that are creating a more re-centred focus on some of the devolved policy areas. However, it is also the case that Scotland, Wales and Northern Ireland may be responding to the achievement of the SDGs and NUA in different ways from each and from England.

The structure and role of sub-state government in the UK is, unlike most other countries, not enshrined in any UK constitution. Local authorities are therefore known as being creatures of statute - that is they can only undertake activities and expenditure if it allowed under specific legislation. This allows local authorities a degree of freedom in terms of delivery type and level of service offered, since national service standards for public services were gradually abolished in the early 2000s. However, local authorities only have freedoms to collect fees and charges over some aspects of their activities such as for car parking, special waste collection or weddings and these generally do not form the main part of their income. The levels of local property tax for democratic and business users together with rents payable for local authority housing properties and in care homes are all fixed by central government rules. Since the introduction of an increased role for the principle of subsidiarity in the EU treaties and as sound economic practice from the OECD[86], there has been a move to provide more powers for local authorities. This started in the 2000 Local Government Act and has been extended in the 2011 Localism Act. Both pieces of legislation only apply in England and Wales. These new legal freedoms have provided opportunities for local authorities to operate in the same way as businesses for some of their services, but this has not been rolled out for all services yet, with social housing being the main outlier and still under central government control.

As well as providing local authorities with more financial powers, there has been a move to develop cross-boundary working between local authorities in Functional Economic Areas (FEAs) which has been emerging particularly since the Sub National Review (HMT 2007). FEAS are generally defined as journey to work areas around cities and their suburban/rural hinterlands or between polycentric towns and cities. The SNR set the context for greater working together within FEAs and through various nudged initiatives rather than formal processes of local authority reorganization, these structures are coming into being.

Initially, following the 2010 general election, 38 Local Enterprise Partnerships (LEPs) were set up for each emerging FEA for the whole of England[87]. These LEPs are not established in law and are not accountable in the same ways as public bodies[88]. However, they have been given the responsibilities and funding available at sub-state level through EU cohesion programmes for the application of European Structural and Investment Funds (ESIF) that operate on seven-year cycles[89]. Some of these funds have specifically been directed towards developing the digital economy and skills as required in the EU Regulation that sets the legal context for these programmes[90].

While some local authorities are members of their LEPs, others are only represented indirectly and do not necessarily have access or influence over the funding programmes that have been made available at this level. Also, while being local in their character, the funding bids that are invited are set within a central government context and frequently the funding is directed towards to the delivery of schemes and projects prioritised by central government departments rather than those set at the local level. The LEPs do not have any formal role in the planning process although local authorities are required to consult with them[91]. Nor do LEPs have any direct responsibilities for managing or governing these FEAs but rather their focus is primarily economic, and their funding is project focused. However, from 2019, all LEPs will become part of a wider government framework[92] that may make them equivalent to non-departmental public bodies.

In some locations, FEAs have been the basis for new Combined Authorities (CAs) where an administrative boundary has been created to reflect the economic boundary. These CAs have directly elected mayors with more strategic bespoke powers for transport, waste and, in some instances, planning[93]. The establishment of CAs have been incentivised by the government through specific funding packages in the areas that have adopted this approach. It is expected that more CAs will be implemented in the future with gradual additions each year. These CAs sit on top of existing local authorities and do not derive any powers from them. Rather, the directly elected mayors are receiving devolved powers and funding from central government. Where there are directly elected mayors, a range of powers have been devolved to this role including, in some cases, direct responsibility for strategic planning, some transport leadership and delivery and other funding for training.

86 http://www.oecd.org/tax/federalism/fiscal-decentralisation-and-inclusive-growth-9789264302488-en.htm
87 Ward M. 20917 Local Enterprise Partnerships House of Commons Library Briefing Paper no 5651 2nd May 2017
88 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/728058/Strengthened_Local_Enterprise_Partnerships.pdf
89 European Structural Investment Funds in the UK https://www.gov.UK/european-structural-investment-funds
90 CEC 2013 regulation 1303
91 MHCLG 2018
92 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/728058/Strengthened_Local_Enterprise_Partnerships.pdf
93 House of Commons Library Combined Authorities Mark Sandford Briefing Paper 06649 4th July 2017

While these CAs do not replace existing local authorities, they do provide some strong and named leadership, that is democratically accountable for FEAs. While the mayors of CAs do not necessarily have responsibilities for LEPs, in 2018 the government announced a series of reforms of LEPs that will bring them into closer alignment and it appears that the role of the LEP will be merged into the responsibilities of the CA Mayors over time. The speed that this occurs will depend on the pace of the creation of more CAs, the local relationships between the LEP and the new mayors, and the UK's position in relation to the EU, where much of this pressure to devolve to a democratically accountable individuals has been derived. At the same time, the UK is also a member of the OECD which also has a major policy programme to encourage all if its members to soft to government structures that align administrative and economic boundaries at FEA levels. These changes may be significant in the development and delivery of the NUA in the future.

The context of the UK's membership of the European Union for e-government

Since 1st January 1973, the UK has been part of the EU and over time some of the policies and legislation that the UK has jointly shared in has become the *de jure* framework for the UK. The development of EU digital policies has been in a range of policy areas including infrastructure networks, the single market and competition. There has also been a major programme to support, develop and implement e-government cross the EU as a means of proving efficient and effective communications between the many levels of the state and the citizen. The EC is also committed to improving the quality of administration in all member states.

In the late 1990s, the EU identified a Common list of basic public services which were initially ten customer facing processes that it prioritised for each member state to focus on internally. This list has now been extended to twenty services and shown in Box 4.1. This was not a pan-EU system but a commitment to achieve online services for issues such as building permits.

Box 4.1: EU Twenty Basic public services

Citizens

- Income tax
- Job search
- Social security benefits
- Personal documents
- Car registration
- Application for building permission
- Declaration to the police
- Public libraries
- Birth and marriage certificates
- Enrolment in higher education
- Announcement of moving
- Health related services

Businesses

- Social contribution for employees
- Corporate tax
- VAT
- Registration of a new company
- Submission of data to the statistical office
- Custom declaration
- Environment related permits
- Public procurement

Source: EU

Since then, the EU has developed government plans for the periods 2006-2010 and 2011-2015. This has been followed by the current plan for 2016-2020[94]. The principle for the action plan is to support the development of open borders, provide more user-friendly services from end to end and to engage with citizens in ways that are open and transparent. The current action plan has adopted a range of operational principles as follows:

- Digital by default
- Once only principle
- Inclusiveness and accessibility
- Openness and transparency
- Cross-border by default
- Interoperability by default
- Trustworthiness and security

Within these principles, the EU has identified some specific services and delivery outcomes to be achieved in the current period. These are:

- Transition all member states to e-Procurement and online contract registers
- Accelerate take up of eID
- Maintain the sustainability of cross border digital infrastructure

At the same time the European Commission has committed to developing the following:

- European interoperability framework
- catalogue of ICT standards for public procurement
- eJustice portal
- mandatory e-connection of each country's business registers
- e-connection of insolvency registers
- single electronic mechanism for the payment of VAT
- digitised transport documents
- establish an electronic exchange of social security information
- further develop job mobility portal
- help member states develop cross border E-health services
- accelerate the use and take up of the INSPIRE Directive on mapping data
- improve citizen engagement of online for EU policy

The introduction of e-government in the UK: central government

The Government programmes to support the implementation of e-government were driven both by the objective to improve efficiency but also to provide joined up services for the citizen, sometimes known as Joined Up Government (JUG)[95]. It was also seen to be part of the UK government's whole modernization project[96]. This was delivered as a major short-term initiative for the government on the Comprehensive Spending Review 2000-2003 that was also supported by the Government's Auditor General[97] who considered the issues of assigning responsibility for services and outcomes between departments when coming to its view that this would support public delivery. This issue of placing accountability for a service had been regarded as a previous 'show stopper' that individual government departments adduced each time more joined up approaches were suggested. This study also looked at the effects of joining up government from the outcomes for people and constituencies including rough sleepers, businesses and children. While barriers of data-sharing and confidentiality were high on the concerns for these approaches, ways were found that would overcome them. One of the key issues identified as a barrier to joining up services for citizens was the culture of individual government departments. Another concern from departments was the attribution for success and how they would receive their future funding if their past outcomes were somehow blurred with other government departments and organizations[98].

This overall departmental concerns limited the ways in which joined up government was progressed in practice. There was more focus on the joining up of services within departments rather than between them even though incentives were offered for cross-silo working. Where there were projects such as those for joined up benefits or a single e-identity, those working on projects would not accept that one department could act for them in registering or verification. There was further success between government agencies where an approach to using common identify credentials between the UK passports and the DVLA are now operational. A system for cross government e-ID was established, the Government Gateway[99] which provided credentials for individuals, organizations and agents and was in operation until September 2018. This was used for specific government transactions such as tax payments. However, the services it provided are now being transferred back to individual government departments. The services which are most e-enabled for delivery of the European Health Insurance Card and individual driving licences. Taxation returns can be submitted and paid online as can company registrations.

94   https://joinup.ec.europa.eu/document/eu-egovernment-action-plan-2016-2020-accelerating-digital-transformation-government

95   Bogdanor, V. (Ed.). (2005). *Joined-up government* (Vol. 5). Oxford University Press

96   Bellamy, C. (2003). Moving to e-government. P*ublic management and governance*, 113.

97   https://www.nao.org.UK/report/joining-up-to-improve-public-services/

98   Mulgan, G. (2005). What Is the Problem. *Joined-up government*, 5, 175.

99   http://www.gateway.gov.UK/

In central government, the e-Envoy's office was established in 2000 and it had close associations with similar programmes and approaches in Australia. The e-Envoy's office led the drive towards the implementation of e-government across government departments. In addition, there were also other specific programmes as part of the CSR 2001-2004 that had their own funding streams including those operated by the Department of Health which had a programme to deliver specific back office initiatives including a patient record system. There were also projects for courts led by the Ministry of Justice[100].

One of the national programmes that has been progressed is that for the National Health Service (NHS) that are designed to provide supporting infrastructure for local applications and central analytics. The NHS number is now available to facilitate the accurate transfer of information between NHS settings. NHS login, a citizen identity system for the NHS and Social Services, is intended to exploit this to give patients and carers access to their records and other information. As a basis for the sharing of patient information across the NHS and associated services, the NHS supports the use of the NHS number – a personal identifier that is used in the secure transmission of patient details.

The NHS Open Exeter system gives GPs access to National Health Application and Infrastructure Services (NHAIS) database which includes details on cervical screening, breast screening, organ donor, blood donation. In addition, the system supports the transfer of patient information when patients move and the management of GP administration and finances.

The NHS Orb (or the NHS app) application is available an IoS and Android but is not yet fully functional. It aims to act as a platform for access to NHS services and relevant third sector services that complements existing gateways. Its objectives are to:

- improve access to healthcare services, as patients can all access a range of NHS services through a single, convenient mobile app for the first time

- empower people to take control and make more informed decisions about their own health and care by providing access to their GP medical record, NHS 111 and the symptom checker on the NHS website

- reduce the administrative burden on general practice by enabling patients to register digitally rather than having to attend the practice

- in the future, enable commissioners to promote digital services to patients that they have commissioned locally

Once registered patients may

- check their symptoms using NHS 111 online and the symptom checker on the NHS website

- book and manage appointments at their GP practice

- order their repeat prescriptions

- securely view their GP medical record

- register as an organ donor

- choose whether the NHS uses their data for research and planning https://digital.nhs.UK/services/nhs-app

In addition, there is an NHS apps library web site (https://apps.beta.nhs.UK/) offering smartphone apps including some for new parents, walking, mindfulness and those experiencing stress. Not all the apps are available in all parts of the country.

Much of the centrally funded digital innovation in the NHS is directed at local time limited projects. These are described later in Chapter 6 and some have gone on to be designated national exemplars (e.g. the Greater Manchester Local Health and Care Record) and others have been taken up by local authorities (e.g. Bracknell Forest) working with local care services. The Test Beds programme is run jointly by NHS England and the Office for Life Sciences[101] and businesses and NHS organizations can compete for funding. The products of the first wave appear to be guidance on information governance and project evaluation[102].

100 https://www.astonbond.co.UK/online-court-e-justice/
101 https://www.gov.UK/government/news/second-wave-of-nhs-england-test-beds-launched
102 https://www.england.nhs.UK/publication/nhs-england-test-beds-programme-information-g
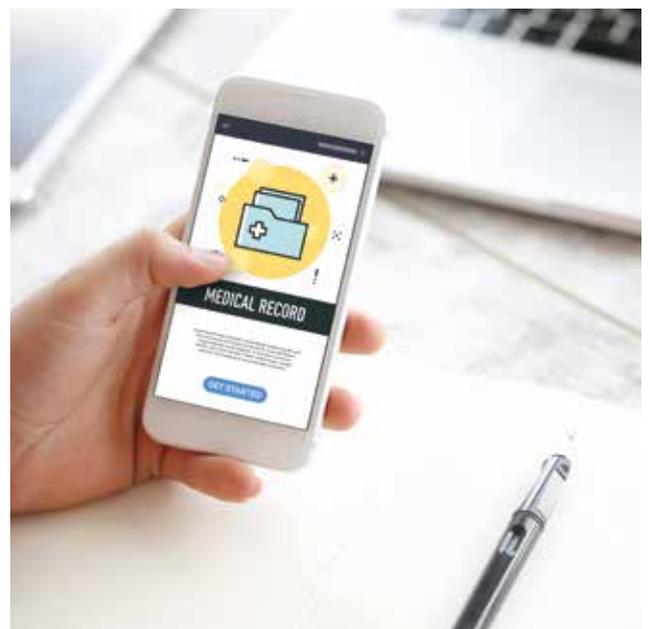
The introduction of e-government in the UK: local government

The implementation of e-government in the UK was a central government objective between 2001-2004 and formed one of its key objectives for the comprehensive spending review or priority programme for that period. The government has regular Comprehensive Spending Review (CSR) periods that provide specific funding support to achieve defined outcomes. While there is a focus on a core period of three years for programme delivery, each CSR has shoulder periods that extend the programme to include the build-up and wind down of each individual programme and the projects included within it. The government allocated around £2bn to achieve the e-government programme in that period to which it gave £1.3 bn to central government departments and the remainder to local government. The whole programme period was 2000-2005.

The e-government programme in local government was led by the government department responsible for local government and centrally advised by temporary staff who were brought in with direct experience of local government services and management. This team was tasked with supporting the wider development and application of e-government services within each local authority. As part of this, each local authority regardless of its size was offered £600,000 over three years which was paid in return for developing and delivering transactional services outlined in an annual report called an Implementing Electronic Government (IEG) statement. The reasons for providing this funding at a flat rate rather than proportionate to local authority size was that it was considered that the strength of delivery across England would depend on the ability of smaller local authorities to deliver this change. While larger metropolitan local authorities were responsible for services which fell within other government programmes, smaller local authorities had responsibility for delivering services with a high degree of customer interest such as payments for local taxation, permits, planning and housing services which were the most used of all local authority interactions and where staff were under pressure. These transactions included those defined by the EU in its programme mentioned earlier and shown in Table 4.7.

In addition to the funding the e-Government central team had regional liaison roles and members spent much of their time in direct relationships with local authorities, informing, advising and encouraging them. In addition, there were incentives to form partnerships between councils and £100m of the budget was spent on this. These partnerships were to develop specific expertise and share costs of development across a range of local authorities in geographical proximity. A similar amount was spent on national projects for smart cards[103], school admissions[104], citizen accounts, and developing support for specific services such as planning. A specific electronic service delivery toolkit[105] was developed as well as a public service taxonomy[106] to support joined up service delivery. In a few locations, central and local services were joined up through front offices but there has been little or no back office integration of services between central and local government. Between local authorities there have also been other initiatives such as the management of fraud for council tax using back office systems.

While the programme came to an end in 2005, the impetus, structures and relationships between councils continued. This working together has also been supported by the local authority association of IT managers SOCITM, which has also made a major contribution to the development and delivery of e-government within the UK.

The role of SOCITM

SOCITM (SOCiety of IT Managers) is an association for IT managers in local government. It is not an association that provides qualifications but it supports the work of its members in practice. It has several strands to its work. The first is to provide development and support for its members across all local authority services. It also provides a focal point for dissemination about new systems, consultation responses and offering mutual support networks for implementation. The second part of SOCITM's work is concerned with its provision of services to members and to the local government community in general. In part, this offers consultancy to individual members and local authorities where they need specific assistance. In addition to this, SOCITM has a research arm **Socitm Insights** which undertakes and publishes research on matters that are relevant now or in the future.

The third element of SOCITM's work that has a significant effect on the quality and standard of service delivery in local government, has been through annual surveys conducted within the Better Connected initiative. In these surveys, specific local government services are identified for review – with about ten being undertaken each year. SOCITM, through its members, identified the standards for good, better and best for this service to be delivered online and then undertook a 100% national survey of local authority web sites to give each local authority a ranking within these three categories. For each service the top performing local authorities were also identified. The league tables and standards were set in the public domain. The services reviewed in Better Connected were frequently those

103 https://www.itso.org.UK/ ; https://www.gov.UK/government/news/government-plans-80-million-smart-ticketing-rail-revolution
104 https://www.eadmissions.org.UK/eAdmissions/app;
105 https://about.esd.org.UK/news/new-look-esd-toolkit
106 https://standards.esd.org.UK/?

30

which rely on specific transactional types for their efficacy is for payment or consultation. After undertaking these reviews for over twenty years, Better Connected is now focusing on local authority compliance with the EU's Directive on the accessibility of websites and mobile applications[107].

The development of smart cities in the UK

As discussed in the scoping paper[108] for this research project, the definition and role of smart cities can be generic and usually interpreted in culturally specific ways depending on their location. Even within countries, the interpretation and use of the smart city label can include a variety of objectives and practices and this is also the case in the UK[109]. In some locations, smart city programmes have been adopted following encouragement from central government whereas for others it has been spurred on by specific technology suppliers including those offering smart street furniture. Overall, there is a wide adoption of the smart city label in the UK and Caprotti et al (2016) found that a third of UK cities with a population of more than 100,000 have 'a clear smart city ambition and/or substantial-related initiatives taking place' (p 53)[110].

The UK Government has encouraged the introduction and development of smart cities through a range of initiatives. In its background paper published in 2013[111], the Government stated that while local authorities recognised the importance of smart city approaches, it also accepted that the range of day to day service delivery challenges including reducing budgets during the austerity period that started in 2010, meant that most local authorities could not progress these initiatives as they might have wished. However, the government wanted to find ways of supporting implementation and promoted the adoption of smart city labels and practices through their range of policy initiatives including through city deals[112]. The government identified five smarter approaches for local government that are strongly driven by information. These are shown in Box 4.2.

Box 4.2: **Smarter approaches for local authorities – the view from Government in 2013**

- a modern digital infrastructure, combined with a secure but open access approach to public re-useable data, which enables citizens to access the information they need, when they need it;

- a recognition that service delivery is improved by being citizen centric: this involves placing the citizen's needs at the forefront, sharing management information to provide a coherent service, rather than operating in a multiplicity of service silos (for example, sharing changes of address more effectively), and offering internet service delivery where possible (at a fraction of the face to face cost);

- an intelligent physical infrastructure ("smart" systems or the Internet of Things), to enable service providers to use the full range of data both to manage service delivery daily and to inform strategic investment in the city/community (for example, gathering and analysing data on whether public transport is adequate to cope with rush hour peaks);

- an openness to learn from others and experiment with new approaches and new business models; and

- transparency of outcomes/performance, for example, city service dashboards to enable citizens to compare and challenge performance, establishment by establishment, and borough by borough.

Source: BEIS 2013 Smart Cities background paper p 7

---

107 https://www.betterconnected.socitm.net/

108 Morphet J and Morphet R. MacArthur Scoping paper on smart cities 2016

109 Cowley, R., Joss, S., & Dayot, Y. (2018). The smart city and its publics: insights from across six UK cities. *Urban Research & Practice*, 11(1), 53-77.

110 Caprotti, F., R. Cowley, A. Flynn, S. Joss, and L. Yu. 2016. *Smart-Eco Cities in the UK: Trends and City Profiles 2016*. Exeter: University of Exeter. http://www.smart-eco-cities.org/wp-content/uploads/2016/08/Smart-Eco-Cities-in-the-UK-2016.pdf

111 DBEIS 2013 Smart Cities Background paper https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/246019/bis-13-1209-smart-cities-background-paper-digital.pdf

112 City Deals https://www.gov.UK/government/collections/city-deals.

Smart cities are also seen by the UK government as a key platform for growth with skilled people and innovation acting as 'honeypots' to attract further investment. To support this push towards the smart city approach, the government funded a range of initiatives and research which are summarised and shown in Box 4.3.

Box 4.3: Smart Cities: Central government Initiatives

Initiative	Where
City deals	Cities all over the UK
Future cities demonstrators[113]	Glasgow
Future cities catapult[114]	London
Technology strategy board[115]	Central innovation agency led by Government
Digital City Exchange	London – focus on utilities and infrastructure
Urban Prototyping[116]	London
Energy Technology Institute[117]	Loughborough

Digital infrastructure

While smart cities have focussed on specific locations, there is also a Government initiative to improve digital connections across the whole country. Some of the improvements have been in rural areas where broad band speeds are as fast as anywhere in the country. However, even in cities, connections are not always fast and the Centre for Cities[118] has argued that this hampers economic growth and development. Their paper also suggests that cities are not yet prepared for the extensive investment in 5G fibre that is to be rolled out from 2020. In London it is estimated that 500,000 microcells will be required to provide 5G coverage and these will be affixed to lampposts and in other public places.

Together with this investment, the Centre for Cities argued that there should be a greater role for digital infrastructure in national planning policy. This was addressed in the revised NPPF[119] (2018) (paras 112-116) where it is stated that planning decisions should support the implementation of digital communications infrastructure. In the NPPF, local authorities are advised not to ban electronic communications in specific areas.

One of the initiatives established by Government is the Future Cities Catapult (FCC) now renamed the Connected Places Catapult[120]. This followed a major research report by the Government Office for Science on Future Cities (2013)[121] and the catapult is one of a number established through EU research funding in the 2014-2020 programme. The Future Cities programme included a range of visits, working papers, scenario building and discussions around the following themes:

- living in cities
- urban economies
- urban metabolism
- urban form
- urban infrastructure
- urban governance

The FCC has been particularly established to support the development of business innovations to support city living[122] and understanding about places. The FCC has supported projects on the use of big data, using technology in real estate to improve productivity and to develop standards.

---

[113] http://futurecity.glasgow.gov.UK/

[114] https://futurecities.catapult.org.UK/urban-innovation-centre/about/

[115] Now innovate UK https://www.gov.UK/government/organisations/innovate-UK a

[116] http://www3.imperial.ac.UK/newsandeventspggrp/imperialcollege/centres/digital-economy-lab/eventssummary/event_1-2-2013-14-48-51

[117] https://www.eti.co.UK/

[118] Delivery change How cities can make the most of digital connections 2018 http://www.centreforcities.org/wp-content/uploads/2018/07/18-07-11-Delivering-change-how-cities-can-make-the-most-of-digital-connections-final-1.pdf

[119] NPPF 2018 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/733637/National_Planning_Policy_Framework_web_accessible_version.pdf

[120] https://futurecities.catapult.org.UK/

[121] https://www.gov.UK/government/collections/future-of-cities

[122] https://futurecities.catapult.org.UK/about/

The role of data analytics

UK Central government policy on data analytics was set out in a policy paper in 2017[123]. In this, the Government committed to keeping the UK at the leading edge of data analytics developments and has identified the importance of making public data available for innovative uses as a key element. The policy paper also recognises the need to use data analytics for smart and efficient government with more responsive public services. It identifies ways of achieving these opportunities for third parties to use open data and uses Citymapper[124], a travel and transport app, as an example.

The UK Government's policy paper sees the role of data held within businesses as a potential major opportunity for development of the data economy and has established a centre for growth through the Digital Catapult[125]. This has been set up by the UK government as one of several catapults, including the FCC, under central funding regimes supported by the EU[126]. The EU also supports data flows across its member states and provides specific protections for EU citizens. While identifying the potential for innovation and economic growth through opening government data, the policy paper offers few specific commitments or examples of how this is being implemented except for mapping data through the GeoVation project[127].

The Government's approach to data analytics has however been described as divergent[128]. Copeland argues that while the government has published its data sets, it has been less proactive in encouraging them to be used or developed. Further, Copeland specifically criticises the Government's support for smart cities while there has been little discussion of how this data can be used locally as part of these programmes and argues that there is a growing recognition that public bodies should be the major consumers of their data rather than external organizations. In part Copeland considers that this is being held back by the fragmentation of data ownership within organizations in the UK and a lack of an overall architecture. This has been a longstanding issue in many public service organizations particularly where there are multiple agencies that support individuals, families, communities or places. While much effort is placed on meeting individual needs once identified, Copeland suggests that public bodies should also be putting more focus on anticipating need and prevention. What is stopping this? As others before him over the last twenty years, Copeland identifies data, legal and organizational challenges.

There is also an absence of leadership and understanding of the benefits that such use of data analytics can bring. While there are local offices of data analytics being established in London, Manchester, the West Midlands, Worcester and Essex, there is still little evidence of how their role is systematically embedded in policy and service decision making.

Smart specialisation

Smart specialisation has been identified as a major mechanism for supporting economic growth within the EU. The OECD has been working with the European Commission to identify examples of where smart specialisation is occurring in different member states and within different sectors. The OECD[129] stated that while smart specialisation is a relatively simple concept, it can be defined as …

> – the concentration of public resources in knowledge investments on particular activities in order to strengthen comparative advantage in existing or new areas – the conceptual and policy implications of smart specialisation are far more complex and transcend three distinct areas: i) the underlying role of scientific, technological and economic specialisation in the development of comparative advantage and more broadly in driving economic growth; ii) policy intelligence for identifying domains of present or future comparative advantage and; iii) governance arrangements that give a pivotal role to regions, private stakeholders and entrepreneurs in the process of translating specialisation strategies into economic and social outcomes… In this sense, smart specialisation is a regional policy framework for innovation driven growth (OECD 2014 p11).

While smart specialisation can be described as a process of discovering, the OECD suggests that it is a different form of development from more traditional R and D and is more bottom-up. While governments may be able to provide specific conditions that support this smart specialisation, the OECD also notes that the choice of specific sectors within FEAs may have some influence on the economic performance of different localities based on their initial strengths and subsequent choices. The UK example investigated in this study was of the automotive industry.

[123] DCMS 2017 Data - unlocking the power of data in the UK economy and improving public confidence in its use https://www.gov.UK/government/publications/UK-digital-strategy/7-data-unlocking-the-power-of-data-in-the-UK-economy-and-improving-public-confidence-in-its-use

[124] Citymapper https://citymapper.com/cities?lang=en

[125] Digital Catapult https://www.digicatapult.org.UK/

[126] Technopolis Group The role of EU funding in UK research and innovation https://www.britac.ac.UK/sites/default/files/2017-05-22%20TG%20Role%20of%20EU%20funding%20-%20MAIN%20FINAL.pdf .

[127] GeoVation data lab https://geovation.UK/

[128] Copeland E. 2018 From analytics to AI: where next for government use of data? https://www.nesta.org.UK/blog/from-analytics-to-ai-where-next-for-government-use-of-data/

[129] OECD 2014 Innovation-driven Growth in Regions: The Role of Smart Specialisation http://www.oecd.org/sti/inno/smart-specialisation.pdf

Smart specialisation in the UK has been promoted by the EU's operational programme 2014-2020 and is a devolved matter that is delivered differently in England, Scotland, Wales and Northern Ireland. The government set out how it intended to deliver smart specialisation in England in a submission to the European Commission in 2014[130] and adopts the following definition:

> "Smart Specialisation seeks to ensure that proposed actions are based upon sound evidence that properly reflects the comparative advantages of the physical and human assets of particular places in the global economy. It emphasises the need to ensure that activities are fully integrated in the local economy and its supply and value chains. It helps to build connections of ideas, finance and trade with similar activities elsewhere. It promotes also the use of enabling technologies that can transfer and add value between related sectors".

Within England, the lead for smart specialisation has been set with a National Growth Board and the strategies for smart specialisation have been prepared by LEPs within their individual Strategic Economic Plans (SEPs)[131]. This approach has allowed for differentiation within each LEP areas in ways that provides a best-fit for local circumstances. In developing approaches to supporting and enhancing smart specialisation at the local level, the government has identified the role of Universities together with the central Innovate UK, which was formerly known as the Technology Strategy Board. The development of smart specialisation initiatives has been through the creation of the centralised Catapults for:

- high value manufacturing
- cell therapy
- offshore renewable energy
- satellite applications
- connected digital economy
- future cities, now connected places
- transport systems
- energy systems
- diagnostic systems for stratified medicine

These approaches are also supported through the cross-cutting themes of the UK Industrial Strategy which are access to finance, procurement, skills and technologies [132]. There are also cross-cutting themes in the UK Research and Innovation Programme which are supported as priorities through the UK's Research Councils and their funding allocations. These priorities are:

- Digital economy
- Energy
- Global Food Security
- Tackling Antimicrobial Resistance
- Technology Touching Life
- Urban Living Partnerships

One of the specific smart specialisation sectors identified in the UK submission for England was that for the Information Economy. Based on the UK's high ranking of technology readiness league tables published by the World Economic Forum. In this EU programme, the supporting Digital Catapult[133] has been awarded £50m funds for a five-year period. The submission demonstrates how the informational economy is represented throughout England using a map showing relative location quotients for 2012, with the greatest quotient being in the Thames Valley. The submission does not detail any more specific objectives or delivery programmes.

The UK's smart specialisation submission for England to the EU also sets out an approach to developing Key Enabling Technologies (KET) which are listed as:

- Big data and energy efficient computing
- Robotics and autonomous systems
- Satellites and commercial applications of space
- Life Sciences, genomics and synthetic biology
- Regenerative medicine
- Agri-science
- Advanced materials and Nano-technology
- Energy technologies (including, energy storage, reduced cost renewables, energy efficiency, bioenergy, transport, next generation nuclear and carbon capture and storage)

As indicated above, the delivery of smart specialisation has been through LEPs and other government initiatives at the local level including Growth Funds[134] and City Deals, which have also been used as a mechanism to promote innovation across the EU[135]. The funding for specific initiatives has been made by

---

130 Smart specialisation in England. London: BEIS. https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/436242/bis-15-310-smart-specialisation-in-england-submission-to-european-commission.pdf

131 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/224776/13-1056-growth-deals-initial-guidance-for-local-enterprise-partnerships.pdf

132 https://www.gov.UK/government/collections/industrial-strategy-government-and-industry-in-partnership#cross-cutting-areas

133 https://www.digicatapult.org.UK/

134 http://www.ncub.co.UK/what-we-do/s3ah.html; https://www.gov.UK/government/publications/smart-specialisation-in-england

135 https://cor.europa.eu/en/news/Pages/Regions-and-cities-call-for-a-new-Smart-Specialisation-2-0-built-on-interregional-cooperation.aspx

LEPs through European Strategic Investment programmes (ESIF) and accompanying bids[136]. While there was a recommendation to Government through a specially commissioned Witty review (2013)[137], there were few specific initiatives in the UK submission for England that demonstrated how more joined up approaches were to be encouraged and monitored.

Across the EU, there has been a review of the progress on smart specialisation and it is proposed that the policies and programmes for the next operational delivery period 2012-2017 will be guided by smart specialisation strategies which will provide closer links with national and local level activities. Research undertaken by McCann and Ortega-Argilés (2014)[138] indicated that the use of smart specialisation strategies and their delivery was as likely to be through political priorities as well as the economic characteristics of any FEA.

Digital skills

An underlying narrative in all these discussions about the use of digital communications to improve economic growth is the powerful dimension of improving digital skills. This debate spans across all types of skills from the use of phone and other technology in daily lives to the development of advanced skills for the use of AI or games development. There is now less debate about the digital divide and digital exclusion than there was ten years ago in the UK. This is because many people have smart phones, elderly people are no longer expected to be technophobes and there are numerous locations with free Wi-Fi even if people do not have such facilities in their own homes. Where children need access for homework, many organizations are allowing them to use their premises and free Wi-Fi after school, even if their main business may be cultural. In some cases, organizations have developed this into mentoring children doing their homework with no internet access at home.

There are benefits for organizations where their services have been e-enabled and can be accessed by service users. These include services such as driving licences, health, travel tickets, car insurance, and medical appointments. These can also be supported by SMS message reminders to reduce failure to turn up for medical or other appointments, for example, for employment interviews[139]. People are more familiar with booking holidays online, increasingly watching TV programmes and sport on pay per view channels and using personal assistant devices in the home. There is also intergenerational support in the development and use of electronic devices. All day-to-day applications including smart cards for public transport or tolls assist in the development of digital familiarity[140].

In 2016, the UK Parliamentary Select Committee, a scrutiny committee reviewing government policy and delivery undertook a study on the availability of digital skills. The Select Committee concluded that the UK faces a skills crisis[141]. The Committee recommended that the Digital Strategy should be published without delay and that this should address the gaps in digital skills as one of its priorities. In response to the Select

Committee's report, the Government mentioned a range of measures to support the development of digital skills including a Coding institute[142]. The UK Digital Strategy[143] was published in 2017 which included a specific focus on the development of digital skills. The strategy reflected that the UK government had spent £85m on digital skills training up to level 2 in 2014-5 and £9.5m on digital exclusion. In terms of public use, the role of public libraries has been identified as the means of delivering Wi-Fi, although it is also the case that, as part of the local austerity programme, local authorities have been closing libraries or passing them into community management. In some local authorities, there are programmes for staff such as that in Chelmsford where there is one to one coaching provided as part of the Sharp 60' programme[144].

In terms of developing skills for business and research, there are over 5,000 code clubs for young people across the country that reply on volunteers for support. In terms of specialist skills in the workplace, the UK scores above the EU average although graduates who leave universities with degrees of which computer skills can be a part, have the highest levels of unemployment six months of any group after graduation.

Conclusions

The wide range of activity in using digital methods to provide services and undertaken back office integration exemplified in this chapter demonstrates that the UK is in a good position to engage in the use of these in delivering the New Urban Agenda. This development has been supported by targets set by the UK's membership of the EU and demonstrated that the UK is a world leader in e-government. The UK also can use the experience of other countries to expand some of the use of back office data as an evidence source for the requirement for services and the outcomes of public policy which may be more challenging as the implementation of the NUA progresses.

136 https://www.gov.UK/european-structural-investment-funds
137 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/249720/bis-13-1241-encouraging-a-british-invention-revolution-andrew-witty-review-R1.pdf
138 Philip McCann, Raquel Ortega-Argilés, (2014) "Smart specialisation in European regions: issues of strategy, institutions and implementation", European Journal of Innovation Management, Vol. 17 Issue: 4, pp. 409-427
139 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5227159/
140 https://www.consultancy.UK/news/14113/UK-smartphone-penetration-continues-to-rise-to-85-of-adult-population
141 https://publications.parliament.UK/pa/cm201617/cmselect/cmsctech/270/27003.htm#_idTextAnchor004
142 https://publications.parliament.UK/pa/cm201617/cmselect/cmsctech/936/93602.htm
143 https://www.gov.UK/government/publications/UK-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need
144 https://www.socitm.net/publications/smart-places-guide-6-education-skills-jobs

# How ready is UK local government to deliver the New Urban Agenda?

Chapter 5:
Planning change in the city:
experience in the UK

Introduction

The role of planning is central to achieving the objectives set out in the New Urban Agenda (NUA) and planning's role extends not only to the use of land and provision of infrastructure but also to housing, energy, equity and resilience. The UK has traditionally had a strong regulatory planning system that has been supported by evidence and sustainable objectives. Pressures to provide more housing and the cost of public services have led to a period of deregulation and, given their outcomes for housing quality and access for example, some of these practices may need to be addressed in the achievement of the NUA.

In progressing the NUA in practice, the UK has already implemented a wide range of smart planning tools which are primarily outward facing for communities, organizations and individuals. These are discussed below and are in the collection and analysis of evidence to support planning policies and decision-making. Increasingly, public bodies are relying on third party expertise rather than maintaining these skills within the organization. In recent years there has been less focus on monitoring the outcomes of policies and implementation of permissions given for development. It has also been difficult to maintain information on housing provided though a removal of regulation such as that for the conversion of offices into residential accommodation. The National Planning Policy Framework (2018)[145] in England has brought the role of monitoring of delivery and land use change to the fore and so the evidence base will be better informed in the future and may be more publicly accessible. This chapter reviews the smart approaches to planning that have already been incorporated within the UK system and could be further developed. Not all approaches are used in every local authority area so some of the challenges may be on filling in the use of these methods across more localities.
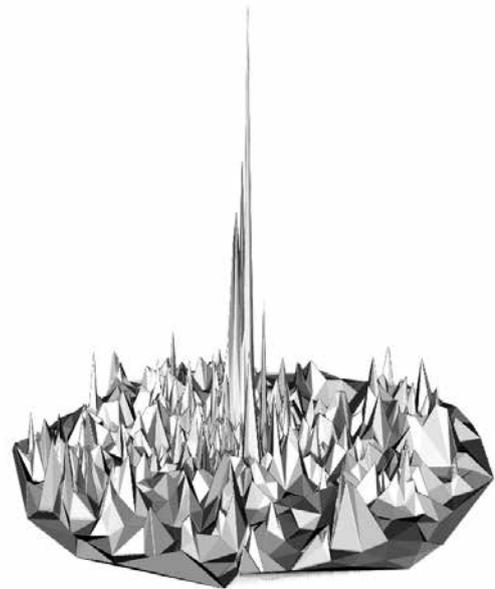
What has already been done to introduce smart methods in planning in the UK

Smart methods which go beyond the traditional use of computer maps and models in the planning process have been used in the planning system since at least the late 1990s since when it has been possible to view planning applications online together with the associated reports and comments and decisions. These are provided by individual local authorities who determine the application. While local authorities have always used the same form for planning applications, the Government has been promoting the use of a single point of submission through the Planning Portal[146] established in 2002 by the Planning Inspectorate National Service (PINS), that is responsible for determining appeals against the refusal of planning consent. PINS also manage the whole consent system for Nationally Significant Infrastructure Projects (NSIPs)[147]. The PINS website also provides all government policy advice and guidance on the determination of planning applications and any subsequent appeals. For NSIPs, the website holds all the documents submitted and details of the determination of the applications.

---

[145] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf

[146] https://www.planningportal.co.uk/

[147] National Infrastructure Planning https://infrastructure.planninginspectorate.gov.UK/

Example 1: Planning Portal – online planning permission system

The Planning Portal provides the following services:

- Start a planning application in any local authority areas

- View your planning applications

- The decision-making process

- How to apply

- Consent types

- Policy and legislation

- Community Infrastructure Levy

- Appeals

- Buy a planning map

- Greener homes

- Find your local trade professional

- Find a planning consultant

www.planningportal.co.UK/info/200127/planning

This national system for the submission of planning applications requires that documents and plans are submitted as PDFs and this gives rise to problems in subsequent monitoring of planning consents for different types of development such as housing. Back office systems cannot read the PDFs and then put the information into monitoring systems meaning that much of this still must be undertaken manually. However, this system does allow communities, citizens and those engaged in development to view planning applications and their views on them.

In addition to the planning application system, local authorities are required by law to make local plans which have a required legal process for their preparation and subsequent adoption. Local authorities include all these processes on their web sites, together with evidence that has been used to support planning policy. They can also link to the PINS webs site for specific government guidance and legislation that may be appropriate in any location[148].

In both planning applications and plan preparations there are statutory requirements for consultation with stakeholders and the community. Some local authorities use specific systems which allow comments to be made on both types of documents. Others have been using a range of methods to engage communities in making comments including online, social media and other more traditional methods. Online, the use of social media including Facebook and Twitter are important as well as systems like SWIPE[149] that allow people to express positive or negative views about any proposal. In some local authorities, they have used imaging to provide some sense of 3d modelling[150] of any specific proposals but these are not in use in general as yet.

All planning activity requires the use of evidence that must be publicly available, and this is published on the local authority website. Much of this evidence will be provided through specific studies that have used data, analysed and then interpreted it. There is little evidence that data or evidence generated through local authority data stores or repositories has been used to contribute to this evidence nor that the evidence collected as part of the development of a local plan or evaluation of a specific planning proposals is included in the data repository. This may be because the data is of different types or may reflect silos within organizations.

Use of AI to validate planning applications

Some local authorities are innovating in other ways. Milton Keynes Council has adopted an approach to using Artificial Intelligence for some of its planning applications processes[151]. These are being rolled out from September 2018 and include a range of services that will be delivered using AI. While the AI decisions will be limited to permitted development applications under current plans, the move will be a landmark in the drive to digitise the planning system. The Council will be operating an AI customer-facing interface to answer general planning inquiries, from the status of applications to case officer appointments, dates, conservation area queries and more. It will also be able to validate planning applications and to determine those that are within the terms of the permitted development scheme[152]. The expectation is that the AI system will be able to find the information required online or on the phone. The development has been supported by a grant from the Future Cities Catapult which is funded by the government and the local authority hopes that this will enable them to use their planning staff more effectively in the future when these services are provided in this way.

148 https://www.gov.uk/guidance/local-plans
149 https://lichfields.uk/blog/2018/july/26/community-engagement-swipe-right-for-development/
150 https://www.constructionnews.co.uk/best-practice/technology/model-london-3d-platform-aims-to-transform-planning/10009499.article
151 https://www.planningresource.co.uk/article/1464481/milton-keynes-council-use-artificial-intelligence-validate-applications
152 https://www.architecture.com/knowledge-and-resources/knowledge-landing-page/planning-decision-making-by-ai-on-the-horizon

The planning system and the NUA: making plans at different scales

Strategic planning

Planning for the FEA is an important component in the delivery of the NUA. While there is no guidance or current operational approaches to strategic planning in England, the revised NPPF published in 2018[153] has included within it an organizing principle for strategic planning policies that will need to be prepared, agreed and adopted by local authorities in functional areas unless there is a combined authority that has a Mayor with planning powers, when they will prepare the strategic planning policies. In Scotland, there have been strategic development plans since 2006 for four city regions and these have brought together plans and delivery programmes. Under the current review of planning in Scotland, the SDPs are expected to be removed and replaced although there is no final agreement with how this should be done. In Wales, there is also a review of planning being undertaken and here the Scottish models of SDPs is expected to be inserted into the system. All these approaches recognise the need to plan at the FEA scale and it is expected that these practices will emerge in the next 2-3 years. The EU has also recognized the role of the FEA scale in planning and delivery programmes through Integrated Territorial Investment strategies and programmes that have been in use in the 2014-2020 Cohesion programme[154]. This approach is expected to be a key component in the next EU programme 2021-2027[155].

The RTPI (Harris 2017) has argued that conceptualising FEAs as smart city regions could be one way of understanding how they operate while elements of their planning for people, places and infrastructure can be brought together. The key elements for closer working using smart city methods could include more integrated planning for boosting inclusive growth, housing a growing population and Infrastructure. To support this, some tools of smart city working would be important including monitoring systems using more standardised and comparable date collection, integrated infrastructure systems, with interoperable tickets and an approach to housing need and provision across administrative boundaries. These approaches can include both the urban and rural areas within the FEA and include social, economic and environmental management and outcomes. There may also be some benefits in sharing tools and techniques within sub-regional areas such as for consultation and engagement. Examples are being developed by a wide range of organizations and these are shown in example 2 (right).

Example 2: National Infrastructure Commission plan for CAMKOX

The National Infrastructure Commission's (NIC) plan for Cambridge, Milton Keynes and Oxford (CAMKOX) arc[156] is conceived as a connected, knowledge-intensive cluster that competes on a global stage, protecting the area's high-quality environment, and securing the homes and jobs that the area needs. The NIC was invited to prepare this strategy for the UK Government and in its report (NIC 2017) states that:

The development of any strategic statutory spatial plan will, quite rightly, need to follow a robust, evidence-based process and be shaped by the requirements of a supporting appraisal framework. Such a framework will be important in helping decision-makers and local communities to understand the impacts of different development options. Supporting analysis might include strategic economic assessments, sustainability appraisals, health impact assessments and equality impact assessments. Undertaking such analyses and appraisals will also give individual planning authorities confidence to shape their local plans to conform with strategic spatial plans and delivery plan.

If designed and scoped in this way, the development of strategic spatial plans, in support of a clear arc-wide vision, should provide an effective mechanism through which neighbouring local authorities can reach agreement on the distribution of development across administrative boundaries within their own sub-regions. This could better enable patterns of development that reflect demand in the 'real economy'. It should also provide a mechanism to support growth discussions in towns and cities where the continued expansion of urban areas would require growth across administrative boundaries (p 79).

153 https://www.gov.UK/government/collections/revised-national-planning-policy-framework

154 http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/iti_en.pdf ; http://ec.europa.eu/regional_policy/en/newsroom/news/2017/12/21-12-2017-study-integrated-territorial-and-urban-strategies-how-are-esif-adding-value-in-2014-2020 ; https://www.cioslep.com/vision/iti-strategy ; https://www.cioslep.com/assets/file/Cornwall%20and%20IOS%20ITI%20Strategy.pdf .

155 http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2018)614735

156 https://www.nic.org.UK/publications/partnering-prosperity-new-deal-cambridge-milton-keynes-oxford-arc/

Example 3: **Cornwall and Isles of Scilly Integrated Territorial Investment Strategy (ITI)**[157]

The Cornwall and Isles of Scilly ITI has been prepared under the auspices of the EU's Cohesion programme Regulation 1303/2013 operating between 2014-2020 and is the only example of an ITI within the UK. This has been identified as an evidence-based programme for delivery by the European Commission (EC)[158]. As a sub region in receipt of European structural and Investment funds (ESIF), the strategy is a mechanism for specifying priorities for the area and establishing a programme of projects and activities that will support their delivery. In the case of this ITI, Cornwall and the Isles of Scilly together with the UK government advised the EC that there was an existing evidence base that was used rather than constructing a new one[159]. The ITI priorities and actions are based on evidence of local conditions. The creation of the evidence base for policy actions and specific delivery was a mandatory requirement of the EU for the ITI. The evidence base identified in the ITI comprises:

- A SWOT analysis

- Evidence of past success in earlier EU programmes

- Relating current economic and social weaknesses to the specific actions and priorities in the EU Cohesion Regulation

- Integration with other plans and strategies including the Strategic Economic Plan required by the UK government

- The use of evidence-based solutions including assessment fo take up of national schemes by local business, the use of local health data, monitoring economic performance in highly represented sectors, national schemes for R and D including tax credits, skills attainment, use of premises

- Identifying evidence of local drivers of productivity and access to the labour market

- A series of independent commissions to establish an evidence base and assess market demand

The broader evidence base[160], prepared in 2015 focused on sectors which were the area's smart specialisations for innovation. The approach taken here was based on desk research, specific market analysis, workshops, consultations which were put into an analytical framework that linked public policy interventions that might contribute to improvements in these sectors.

157 Cornwall and isles of Scilly Integrated Territorial Investment Strategy (ITI) https://www.cioslep.com/assets/file/Cornwall%20and%20IOS%20ITI%20Strategy.pdf

158 CSIL, Centre for Industrial Studies 2015 Territorial Agenda 2020 put in practice Enhancing the efficiency and effectiveness of Cohesion Policy by a place-based approach Volume I – Synthesis Report http://ec.europa.eu/regional_policy/sources/policy/what/territorial-cohesion/territorial_agenda_2020_practice_report.pdf

159 van der Zwet A., Bachtler J., Ferry M., McMaster, I. Miller S. 2017 http:// ec.europa.eu/regional_policy/sources/docgener/studies/pdf/integrated_strategies/integrated_strategies_en.pdf .

160 Cornwall and Isles of Scilly Research, Development and Innovation Evidence Base Report 2015. https://www.cioslep.com/assets/file/Archive/1_CIoS_RDI_Evidence_Base.pdf and appendices https://www.cioslep.com/assets/file/Archive/2CIoSRDIEvidenceBaseAppendices.pdf

Example 4: Strategic Economic Plans

First included in the Government's prospectus for sub-regional FEA growth deals in 2013, Strategic Economic Plans[161] (SEPs) are prepared and 'owned' by Local Enterprise Partnerships (LEPs) in which many local authorities participate in but do not lead. SEPs are expected to be prepared based on evidence. The evidence required includes that of joint working between local actors as well as date-based evidence of local conditions. Further there is a requirement for evidence-based asset strategy between the partners to promote effective and efficient working.

In terms of the proposed action programmes to deliver local growth, there is a requirement that these are evidence-based and that evidence has been shared between partners. It will also have to demonstrate the role and use of national evidence of what works. It will also need to demonstrate how the commercial and technical evidence underpins the proposals in the SEP.

Growth plan

- Vision for the local area

- Strategic objectives – these objectives should be SMART. For instance, they should be time bound and include indicators and targets

- Area opportunities for growth – diagnosis, evidence and support (based on the Local Enterprise Partnership's and local leaders' understanding of the area's competitive advantage, and unique combination of strengths and challenges)

- Area barriers to growth (market failures) – diagnosis, evidence and support

- Evidence that proposed interventions (both interventions and flexibilities) are appropriate to address market failure based on a clear evidence base and logical chain

- Explanation of why the proposed solutions are optimal; consideration of alternatives

Implementation Plan

- How the interventions will be designed and commissioned

- The value for money case for the interventions

- Using existing resources and decision-making processes to promote growth, with evidence of commitments to action by named parties.

- Area wide funding – local authority co-operation on the alignment of or joint preparation of local plans

- Evidence that proposed interventions will have an overall positive impact on sustainable development.

- Governance

- Assessment of deliverability, capacity and risks – Public reporting and accountability

- Wider tasks – Delivery Plan

- Delivery Plan Proposed management of delivery

- Delivery, timeline and clear milestones

---
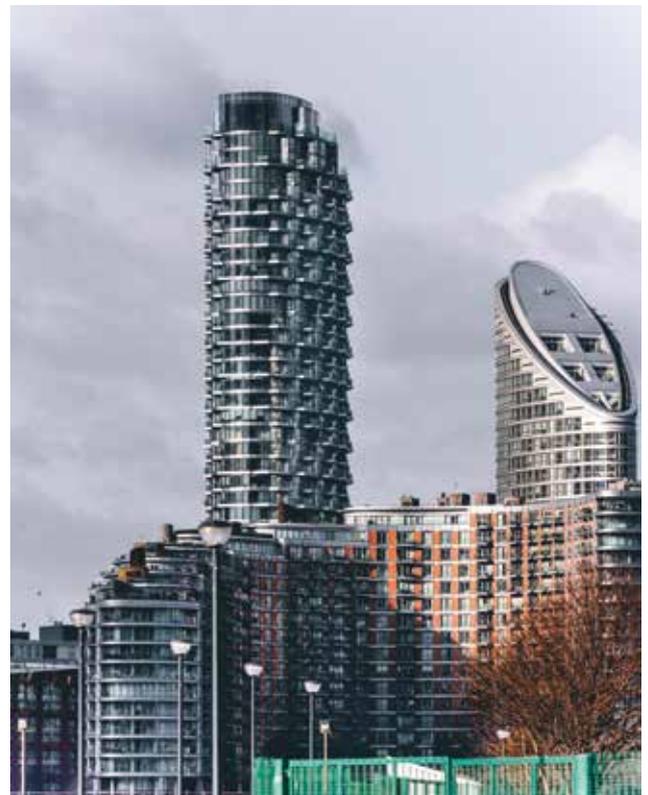
[161] Growth Deals: initial guidance for local enterprise partnerships Technical guidance for LEPs that explains how to negotiate Growth Deals.
https://www.gov.UK/government/publications/growth-deals-initial-guidance-for-local-enterprise-partnerships

Example 5: Mayor of London's Plan

The London Plan is one of the responsibilities of the Mayor of London and it is reviewed and revised regularly within at least every ten years usually shorter. Although the London Plan is prepared under different legislation from other local authorities and is based on the earlier form of plans than the current legal model set out in the Planning and Compensation Act 2004, it uses a significant amount of evidence to support its policies and proposals. As with all other plans prepared under planning legislation, the evidence base is set it in detail with public access to the evidence amassed and used to make the plan[162].

Unlike many other localities in the UK, London has a data store[163] that is run by the London Office of Data Analytics (LODA). It has three specific objectives:

1. Data-driven services for citizens, designed and commissioned around their needs;

2. Efficiency gains for public services; and

3. Fresh insight into how broader urban challenges like air quality can be tackled using new technology.

However, there appears to be no interconnection between the Mayors functional responsibilities for the London Plan and other matters such as transport and LODA.

Example 6: Strategic Planning in the National Planning Policy Framework (NPPF)

The NPPF has identified which issues are required to have strategic policies within plans[164] which are:

a) housing (including affordable housing), employment, retail, leisure and other commercial development;

b) infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);

c) community facilities (such as health, education and cultural infrastructure); and d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.

The areas likely to be defined by these strategic polices are functional areas as set out in the Planning Practice Guidance[165] and states:

How can functional economic market areas be defined?[166]

Since patterns of economic activity vary from place to place, there is no standard approach to defining a functional economic market area; however, it is possible to define them taking account of factors including:

• extent of any Local Enterprise Partnership within the area;

• travel to work areas;

• housing market area;

• flow of goods, services and information within the local economy;

• service market for consumers;

• administrative area;

• catchment areas of facilities providing cultural and social well-being; and

• transport network.

162 Mayor of London Plan evidence base https://www.london.gov.UK/what-we-do/planning/london-plan/new-london-plan/evidence-base

163 London Data Store http//data.london.gov.UK/loda/

164 NPPF https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf

165 Planning Practice Guidance 2018. https://www.gov.UK/guidance/plan-making#delivery-of-strategic-matters f

166 Paragraph: 011 Reference ID: 61-011-20180913 Revision date: 13 09 2018

Example 7: The World Bank

The World Bank reviewed the role of plans to city development in 2015 and reported on a range of good practice[167]:

- Local authorities with devolved powers to deliver

- Strategic plans linked to investment and delivery

- The importance of the links to local economic strategies

Example 8: The OECD

As part of its programme of research and policy advice on NUA, the OECD has published a range of studies on planning including the governance of land use in OECD countries[168] where the report states that the governance of land use is critical in managing environmental and health issues. It is also important for distribution of wealth within places and how they can contribute to the state as a whole. While the OECD recognises that much is already done to support land use regulation by governments, it recommends that there should be much more engagement in the public policy outcomes of land use decisions. In order to meet NUA and the SDGs, The OECD argues that there should be more focus in the achievement of densification within the planning system and the reinforcement of town centres. Its findings and recommendations are:

- A wide array of public policy affects land use

- Well designed tax policies are crucial for achieving spatial objectives

- Subnational fiscal systems affect planning policies of local governments

- Land use regulation should respond to demographic and economic trends

- Greater integration of land use policies across sectors and levels of government is needed

- Monitoring and evaluation of land use and land use regulations should be improved

The OECD accompanied this research with the publication of a review of planning systems in all its members[169] to examine their position relative to the wider findings.

Planning at the local level: The role of the NPPF in delivering the NUA

While there is less public recognition of the SDGs within the public domain, there is some evidence that the key elements of scale and type of planning issues that need to be considered have been internalized through the planning system in England including the recently reviewed National Planning Policy Framework (NPPF)[170]. The NPPF is a set of guidance on the delivery of the planning system in England. It sits within the legal framework adopted in the Planning and Compulsory Purchase Act 2004 and its role was established in the 2011 Localism Act. The first version of the NPPF was published in 2012 and this was issued in a revised form in 2018. While the two versions are similar, it is possible to identify specific elements of the NPPF that help to deliver the UK Government's commitments to the NUA and this might be the outcome of the Cabinet Office's approach to imbedding these SDG within Government departmental plans.

While the planning system in the UK is established to support the sustainable development of land through plans and regulation, there are some specific elements on the NUA which are now apparent in the UK's planning policy and particularly that for England. These are as follows:

Functional economic areas
The NUA has a strong focus on the relationship between functional urban areas and their hinterlands that should also be reinforced through governance as well as planning arrangements (para 47). The NUA specifically stresses the need to work across administrative areas and borders to treat the functional area (para 88). Within these areas, then the interconnections that can support multi-level government are also identified as being important as a means of achieving horizontal and vertical integration. In particular, inter-local authority partnerships are identified as an important element of this cooperation (para 96).

The NPPF incorporates requirements to work at a strategic level, including cities and their hinterlands and across administrative boundaries for specific levels and types of planning. The development plan for every area must include strategic policies which demonstrate how this cross-boundary working will be helping to deliver housing and infrastructure.

167 World Inclusive Cities Approach Paper May 2015 http://documents.worldbank.org/curated/en/402451468169453117/pdf/AUS8539-REVISED-WP-P148654-PUBLIC-Box393236B-Inclusive-Cities-Approach-Paper-w-Annexes-final.pdf

168 https://read.oecd-ilibrary.org/urban-rural-and-regional-development/the-governance-of-land-use-in-oecd-countries_9789264268609-en#page1

169 https://read.oecd-ilibrary.org/urban-rural-and-regional-development/land-use-planning-systems-in-the-oecd_9789264268579-en#page3

170 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf

In addition, Strategic areas must define which strategic matters that they will need to plan for jointly (para 25). There is also a need for these local planning authorities to prepare a statement of common ground as part of their duty to cooperate and this is expected to reflect authorities working together on the functional geography of the area[171].

Vertical integration of plans

The NUA stresses the importance of working integrating planning through the spatial scales (para 72) to include multilevel government (para 88) working across administrative boundaries.

In a system of spatial plans at different scales in the UK, there is a requirement to vertical alignment between them. Some infrastructure investment is described as nationally significant infrastructure and this will be determined by the government and parliaments. There are then strategic plans and policies which vary in different parts of the UK although there has been some convergence in their operation occurring currently. There are then local development plans and within these, neighbourhood plans which are made by local communities within a system that must align with the local plans (NPPF para 12). Local plans also must take these into account as well as makings strategic policies and working within strategic plans where these are made.

Preventing urban sprawl and densification

In the NPPF, there is an expectation that green belts, where they exist, will be used to contain urban sprawl (para 13). At the same time issues of density are to be addressed close to public transport (para 102) and opportunities should be taken to increase urban densities where possible (para 106). This should be accompanied by standards for minimum density (para 123).

Urban extensions

The NUA supports the role of urban extensions as part of its approach to managing urban land use more effectively and as a means of promoting urban compactness rather than sprawl (para 69). The NUA states that it will promote urban extensions as a positive policy for change and improvement in housing (para 97) and as planned settlements as part of a wider set of spatial planning policies (para 98).

In the NPPF, the planning policy includes the provision of new settlements and urban extensions where they are well located and designed and served by infrastructure (para 72). The Government sees new settlements as a means of meeting the housing crisis in England[172] and the Town and Country Planning Association has long been promoting the role of Garden City principles and best practice as a means of achieving high quality places where these are developed[173].

Land value capture

As cities grow, the NUA has emphasised the need to monitor land values to ensure that land price increases do not restrict where people can live (para 104) and have stated that 'We will promote capacity-development programmes on the use of legal land-based revenue and financing tools, as well as on real estate market functioning for policymakers and local public officials, focusing on the legal and economic foundations of value capture, including the quantification, capturing and distribution of land value increments' (para 152).

The role and use of land value capture has been growing in public debate in the UK. Some of the value uplift is captured through long standing means such as the negotiation of development contributions and community infrastructure levy but these are negotiated locally and will depend on the political will and available expertise for their success. In a recent study, more than 85% of contributions for development were negotiated and of those local authorities able to levy CIL, only 39% were doing so[174]. Land value capture has been the subject of a specific Parliamentary Inquiry[175] which concluded that there was further scope for local authorities to claim a greater proportion of land value increases which could be undertaken at source through changes in the Land Compensation Act 1961 for the value of land when it is subject to compulsory purchase for new development by local authorities.

171 Paragraph: 009 Reference ID: 61-009-20180913
172 https://www.theplanner.co.UK/news/government-sees-new-settlements-as-part-of-housing-crisis-solution
173 https://www.tcpa.org.UK/best-practice-in-urban-extensions-and-new-settlements
174 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/685301/Section_106_and_CIL_research_report.pdf
175 https://www.parliament.UK/business/committees/committees-a-z/commons-select/communities-and-local-government-committee/inquiries/parliament-2017/land-value-capture-inquiry-17-19/

Incorporating infrastructure within spatial planning

The NUA is committed to promoting an integrated approach to sustainable transport and mobility that is strengthened though the planning system (para 50). This includes the use of technologies to support the use of transport. To achieve these objectives, the NUA will be promoting more investment in public investment, more Transport Oriented Development (TOD) and more coordinated land use and transport investment. There is also consideration of the role of urban logistics and freight to support the operation of cities and minimising the effects on the environment (para 114). The NUA states that there are benefits of undertaking this integrated approach across FEAs (para 115) and between different departments dealing with these issues in the same organization (para 117). The NUA also supports the development of sustainable urban mobility plans.

The NPPF states that there should be consideration of the ways in which transport and other development should be planned together in a more integrated way (para 103), while new development should support existing networks and the digital network required to support transport use (para 127). In the UK, many local authorities are preparing sustainable mobility plans within an EU framework and these frequently stress across the functional economic area.[176]

Design

In the NUA, the role of design within and of settlements is as important as other key factors in its delivery. In part, this is to optimise the urban form (NUA para 15), including through new neighbourhoods (ibid para 52) and to ensure that people can have a strong sense of wellbeing (ibid para 37). The NUA includes design as a key component of spatial frameworks (ibid para 51). Design is also included as a means of supporting urban environments that respond to age and gender as part of multi scalar integrated planning. Design also includes networks that make links between places and integrate places using different forms of infrastructure including parks and open spaces (ibid para 100). Design is also considered to be a central element of planning for resilience (ibid para 101) and safety (para 113). Design is also related to managing the city in the best ways possible (para 129). The NUA states that it is important for all planners to have some training in design (ibid para 102) and that its use should be supported using digital tools (para 156).

In the NPP[177], the role of design within planning is mentioned frequently and has its own specific section. In section 12, the principles of design are identified both in their role in achieving better places and in the immediate design of new and intensified development. Design is embodied as one of the key social objectives of planning (para 8) and design principles are identified as non-strategic policies within plans (para 28). Design assessments are also identified as a means

of promoting development on sites (para 68) while exception sites for development should conform with design policies (para 71). Design is also a key element of large-scale development or significant urban extensions, which can also ensure access to infrastructure and facilities (para 72). In the countryside, the development of single houses or new business premises must also address design as a significant element in determining their suitability (paras 79, 83). Where design principles are developed into plan policies, the NPPF states that it is important that these should be set out in ways that those using them can have some certainty but also that the details should be established with the community (para 126). Design principles can be expressed through guides or codes that can be used by those wanting to develop or improve their area (para 126).

Like the NUA, design is also concerned with promoting public safety in relation to infrastructure (para 95) as well as the integration of transport with public spaces and walking (paras 102, 110). In addition, provision should be made to charge electric vehicles (para 110) and where digital infrastructure is provided in ways that are visible, then these should be well designed to fit in with the local environment (para 113). Where there is urban intensification through the provision of additional upper floors on buildings, then these should also be designed well to create safe places (para 118) which should also be the case for other areas of urban intensification (para 123). Design is also one of the means of establishing resilience particularly in relation to climate change (para 150).

Using smart city approach including the use of digital services

The NUA commits to using smart city approaches for digitalisation, clean energy and the use of technologies including for transport while helping citizens to make sustainable choices in their travel modes (para 66). This includes promoting smart grid district energy systems. In supporting urban management and government, the NUA also supports the use of digitalisation for accounting and back office systems that can support community access and transparency of record keeping (para 151). Digital tools for supporting individual and community engagement and delivery of services is also recognised as a key element of the NUA that also includes the use of geospatial information and analysis 'will be encouraged to improve long-term integrated urban and territorial planning and design, land administration and management, and access to urban and metropolitan services' (para 156). The NUA also 'will support science, research and innovation, including a focus on social, technological, digital and nature-based innovation, robust science-policy interfaces in urban and territorial planning and policy formulation and institutionalized mechanisms for sharing and exchanging information, knowledge and expertise, including

---

176 http://www.eltis.org/
177 https://assets.publishing.service.gov.UK/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf

the collection, analysis, standardization and dissemination of geographically based, community-collected, high-quality, timely and reliable data disaggregated by income, sex, age, race, ethnicity, migration status, disability, geographic location and other characteristics relevant in national, subnational and local contexts' (para 157).

In planning, managing and governing the urban area, the NUA also identifies the specific role and use of data to promote accessible solutions (para 92), policy priorities and outcomes (para 104), including land price rises (para 104). Data should also be used to enforce regulations and to ensure that there is adequate provision of housing (para 111). To make this analysis, urban governments must ensure that data is managed to provide this information, including monitoring the distributional effects of resource allocation (paras 136, 157). This will also need to be supported by improved data collection (para 158) and be used in mapping (para 159).

In the NPPF, there are references to the use of smart tools in making plans available through public presentation and engagement (para 16). In the provision of infrastructure for new development then digital provision should be made alongside other provision. Elsewhere, there should be provision for exiting and more advanced digital infrastructure including 5G as well as smart city applications (para 112).

Planning at the community level

The introduction of Neighbourhood Plans within England in 2011 follows on from community planning approaches in Scotland and Wales that have been more systematic across the whole of these nations. The English approach has been related to a bottom-up approach, which some have argued has been in more prosperous areas[178]. There were also indications that these communities engaging positively in neighbourhood planning could manage housing developments in their areas and possibly restrict change[179] although this has not proven to be the case in practice as Neighbourhood Plans have to be compliant with local plans and national policy. However, they can provide some more systematic input into the facilities that are required to support communities with or without new development, although with new development communities with Neighbourhood Plans receive a portion of the development mitigation funding to spend on their own local priorities.

There were over 1800 designated Neighbourhood Plans areas in 2016 although not all of these will result in a Neighbourhood Plan[180]. In a recent briefing on Neighbourhood Planning prepared for the UK Parliament[181], it is reported that 500 Neighbourhood Planning areas have had local referendums on adopting their Neighbourhood Plan as a required stage in the process of 'making' a plan. As part of the monitoring of levels of active, the government department responsible has an interactive web site which can be used to identify where Neighbourhood Plans and other community activities are being undertaken[182] are shown on map layers. There have been legal challenges to the preparation methods of local plans and there have been calls for local plans to be more evidence based[183] than has hitherto been the case. Despite the number of Neighbourhood Plans, and the level of guidance and support provided through Central Government funding to third party organizations, there appears to be variations in practice. This may continue although regulation and further legislation may start to formalise processes of plan making and adoption more closely.

The delivery of a neighbourhood planning system in England contributes to the delivery of a more community-based approach to planning and delivery as set out in the NUA although until it is a practice across the whole of England and there is alignment with local democratic institutions such as parish councils, it is not yet a fully delivered approach.

Challenges in using big data in planning policy and decision making

Where there has been considerable debate about the role of the evidence-based policy making in the UK, in practice the approaches that might be expected in terms of policy pilots have largely been abandoned for political imperatives of quicker delivery. The role of evidence-based policy making has been developed though the What Works evaluations, like those in the US but these have posed primarily to high level policy and academic audience other than to policy makers working on delivery from day-to-day. Another approach of Randomised Control Trials (RCTs) has been used by the Behavioral Insights Team (BIT)[184], formerly the Nudge unit in central government.

178 Brownill, S., & Bradley, Q. (Eds.). (2017). *Localism and neighbourhood planning: Power to the people?* Policy Press.

179 Bradley, Q., & Sparling, W. (2017). The impact of neighbourhood planning and localism on house-building in England. *Housing, Theory and Society*, 34(1), 106-118.

180 https://lichfields.UK/content/insights/?article=neighbourhood-plans-in-theory-in-practice-in-the-future

181 'Neighbourhood Planning' House of Commons Library briefing Paper Number 05838, 12 October 2018 Gabrielle Garton Grimwood

182 http://communities.maps.arcgis.com/apps/webappviewer/index html?id=d195c3134caa46b5a638ad0c4f0cce77 https://lichfields.UK/content/insights/?article=neighbourhood-plans-in-theory-in-practice-in-the-future

183 https://lichfields.UK/content/insights/?article=neighbourhood-plans-in-theory-in-practice-in-the-future

184 https://www.behaviouralinsights.co.UK/

While data may be available from local authority data mills, the use of big data will depend on the extent to which it can be applied within models to assess the effects of different policies or in resilience testing in risk management. The policies are not derived from the data but rather from the political priorities of the responsible tier of government and this may vary according to the issue being considered. However, big data can reinforce and support these decisions. It is also important to consider that governments may be choosing policy models without any understanding of whether they are producing the outcomes they are seeking and, in many cases, continue regardless of the evidence to the contrary. While evidence-based policy making has been developed through the What Works Centres[185] for local economic growth[186] and for children's services[187], there is not a lot of evidence that its approaches and findings are being used in practice.

There are also issues about the capacity, resources and skills of policy staff in undertaking this type of analysis. The data sets may be expensive to access or difficult to analyse. In planning, proposals can be tested to their limits through the judicial processes, so policy and plan makers frequently prefer to mitigate any risks of failure by employing consultants to undertake these assessments. The use of such assessments will also depend on the accuracy of the commissioning specification. It is also the case within UK planning, that many local authority plan makers are likely to follow the methodologies used by their peers, particularly if such methodologies have been found to be robust in formal processes such as local plan examinations or judicial review processes. While in the past, planners frequently had access to internal research and development resources, most of this work is now undertaken externally through the government statistical analysis of large data sets such as the census. Further, planning professionals working with practice no longer routinely undertake data analysis as part of their professional education although several UK universities offer specific routes to professional qualification through informatics[188]. However. These students once qualified may find their way into specialist consultancies rather than being employed in a local authority planning team.

In Scotland there is a spatial data hub that all local authorities and government can use[189]. The spatial hub is supported by the Spatial Information Service (SIS)[190] that operates a single gazetteer for addresses in Scotland, a location for all spatial data and a platform for local authority notifications. There is also a One Scotland Mapping Agreement (OSMA[191] which provides the whole of the public service with access to the National Ordnance Survey mapping licences.

Managing land uses to meet changing needs and objectives

Land use changes at the local level are subject to monitoring through planning permissions and focus on what is specifically changed through this consent. However, planning permissions are not always implemented, and land uses may stay the same. Other specific studies look at monitoring retail or employment floorspace for both commercial and public purposes. In contrast, the Colouring London project has been designed to capture the building fabric of the whole of London. It is being created as a public resource that is also a first port of call and will be partly compiled using crowd sourced data[192].

Changing land use is part of the planning system that both sets the policies for land uses and regulates their change, including developments on them. In the UK, the greatest focus of the planning system recently has been the provision of more housing through designation of land that has been in other uses such as employment or transport for housing uses. There is a central system for monitoring how much land has been designated and how many houses are subsequently built which will also include conversions from other uses. In 2018, there were estimated to be approximately 500,000[193] unimplemented planning permissions for dwellings so that even when plans have identified land for housing these sites are not always used in that way and where there is a specific planning permission to do so. Other changes in land use, such as the provision of major infrastructure such as highways, railways and energy centres are provided using systems that can enable the government or scheme promoters to compulsorily acquire land to enable the projects to be implemented. Similar powers apply to the provision of new settlements although there are currently high costs associated with land compensation to existing owners in these cases.

185 https://www.gov.UK/guidance/what-works-network
186 http://www.whatworksgrowth.org/
187 https://www.nesta.org.UK/project/what-works-for-children
188 Constantine E. Kontokosta. 2018. 'Urban Informatics in the Science and Practice of Planning' First Published August 27, Journal Planning of Education and Research 2018 https://doi.org/10.1177/0739456X18793716 .
189 http://www.improvementservice.org.UK/spatial-hub.html
190 http://www.improvementservice.org.UK/spatial-information-service.html
191 http://www.improvementservice.org.UK/one-scotland-mapping-agreement.html
192 https://www.ucl.ac.UK/bartlett/casa/research-projects/2018/aug/colouring-london
193 https://www.telegraph.co.UK/property/news/UK-has-backlog-423000-new-homes-planning-permission-waiting/

Operation of existing capacity: infrastructure

Understanding the capacity of the existing transport infrastructure system for a place including its contribution to its future economy is the basis for any investment strategies. There are several factors that are related to the use of infrastructure capacity whether public transport, road or air. In some cases, the only response is that more capacity needs to be provided though major new investment. However, there has been considerable effort placed in finding what can ensure that the existing infrastructure operates more effectively and efficiently to create greater capacity. It is also important when considering investment in new capacity how this will be aligned with where people will live, jobs and major tourist/leisure attractions. In some cases, like London Heathrow airport, there is a physical constraint on capacity related to the number of runway slots and their use has already been optimised. For rail use, there have been projects to extend trains and platforms in station and it is expected that more capacity can be generated by changes to signals. However, many of the parts of the country that are well connected with transport are already developed but still receive priority for infrastructure funding. While it may be possible to densify their land uses there will also be development in other currently less well-connected locations. On London Underground, there has been as much as a 60% capacity increase through upgrading the carriages and the frequency of trains.

Transport for London has been considering the role of autonomous vehicles as a means of increasing road capacity[194] and believes that there will be several advantages once autonomous vehicles are introduced. These are shown in Box 5.1.

Box 5.1: The potential benefits of autonomous vehicles for London

- Helping us reach our goal of eliminating death and injury on the roads

- Optimising the use of limited road capacity and smooth traffic flows, cutting journey times and energy use

- Providing TfL with a rich source of travel data enabling better transport planning as well as help manage demand more precisely

- Allowing large cost savings for buses while delivering a faster more efficient service

- Offering a convenient alternative to private ownership, reducing the demand for parking

- Extending access to opportunities for the young, elderly and those with mobility difficulties

- Increasing the efficiency of goods distribution across the capital

Source: Outline Transport Analysis 2050 Mayor of London p 58

---

[194] https://www.london.gov.UK/sites/default/files/Transport%20Supporting%20Paper_3.pdf

Preparing for climate change

Actions required to be undertaken at the local level to act upon climate change are many. The Local Government Association has published a workbook for local councillors to advise them of the kind of actions that they need to be taking and how they can bring these into effect[195]. It also discusses the role of local political leadership in acting on climate change including brokering actions with other agencies and providing leadership to communities. Some councils, like Peterborough are establishing their own green energy companies[196] while Islington has introduced a heating network for an area[197]. Other local authorities, like Bristol, are promoting active travel. All these actions are important although it is not clear how they feed into wider monitoring of the local management of climate change and their contribution to a wider national picture at the present. A project on the use of freight delivery in London is assessing how it can be managed and is using a range of digital methods including monitoring, simulations and visualisations[198]. As freight transport comprises 16% of all road vehicle movement in cities, including the last mile of delivery, it is important to understand these movements and how they may be changed to contribute to improved air quality, safety and less congestion.

Dealing with unexpected events: resilience

Preparation for unexpected events relies on technology to monitor and anticipate them and then as part of process for warning people. Some of these warnings may be long term – by enabling people to assess sites that might be liable to flood or where coastal erosion might be most likely to occur. They can also be used when events occur unexpectedly in ways that can warn people or keep them in touch with options of where to go and how to get there. In Selby[199], there are initiatives to centralise communications about unexpected events including fires and flooding so that people need only go to one place to find out what is happening and what to do. In Wyre, through pre-planning, a vehicle was used as a means of focussing communications with vulnerable residents during floods in 2015, using a range of technologies to show what was being done including the use of drones in transmitting pictures of agency activity[200]. A wider project was adopted in Dorset between all the agencies involved in any major incident. In seeking to bring together and coordinate all the communication systems so that all the information could be in one place it was found that currently systems would not enable that to be done[201]. The agencies established a Digital Experts Panel which proposed a digital call cascade in the event of a major incident. While this did not work effectively initially, the local resilience form and the digital experts' group have been refining and extending the approach to alert people using technology if a major event occurs.

Supporting creative places

Places are offering creative industries and supporting the creative economy have also been identified. In their research, Nesta have identified 47 places that are specifically attractive and used by creative industries in clusters and networks[202] and located them within an interactive map[203]. Nesta has also identified which local factors can be important to create clusters and networks and how these can be encouraged through specific actions. There is also a Creative Local Growth[204] fund that is administered in England by the Arts Council. The projects funded have been to support digital creative businesses in specific cities including Birmingham, Brighton, Newcastle, Hull and Nottingham. In 2018 a specific funding package was announced by Government of £20m for the creative industries in town and cities as part of the national Industrial Strategy[205] although this funding will not all be available for digital projects. This will also be administered by the Arts Council.

Responding to change: methods and culture

Role of guidance and regulation
Much of what will be required to achieve safe and resilient places and supporting the delivery of the NUA will be through the planning system particularly although not exclusively through new development. The planning system is supported by the building control system, and in the case of industrial and commercial premises through other agencies such as the Fire Service and the Health and Safety executive. While much of planning is undertaken within a legal framework that can be tested in the courts, it is also the case that much of

195   https://www.local.gov.UK/sites/default/files/documents/11.78%20A%20Councillor%27s%20workbook%20on%20acting%20on%20climate%20change_3.pdf
196   https://www.local.gov.UK/saving-through-energy
197   https://www.islington.gov.UK/energy-and-pollution/energy/bunhill-heat-network
198   https://www.ucl.ac.UK/bartlett/casa/research/current-projects/freight-traffic control-2050
199   https://www.local.gov.UK/unawards-2016-winner-best-crisis-communications-selby-district-council
200   https://www.local.gov.UK/wyre-council-communicating-during-storm-desmond
201   https://www.local.gov.UK/dorset-local-resilience-forum
202   https://media.nesta.org.UK/documents/the_geography_of_creativity_in_the_UK.pdf
203   https://www.nesta.org.UK/blog/interactive-map-of-the-geography-of-creativity-in-the-UK/
204   https://www.artscouncil.org.UK/funding/creative-local-growth-fund#section-4
205   https://www.gov.UK/government/news/20-million-government-boost-for-culture-and-creative-industries-in-england

planning depends on the use of guidance and codes that are important in delivering safe and resilient places. These can, before codes of connection for utility services, where the UK government has agreed a voluntary standard with water and sewerage companies in new development[206]. The government has also established a programme for the delivery of superfast broadband and for standards of service across the whole country. Where there are areas with poorer performance, there can be pressure to focus on improvement to achieve national average levels of performance.

While planning has a significant role in determining how development can be delivered through the issue of planning permissions, it also has a role in the delivery of guidance through local plans and other advisory documents. For air quality, the ways in which it is measured is hyper local but the ways that are required to improve it require an integrated approach across multiple scales of government. While local authorities can manage the specific access to roads thus can only be achieved within a national legislative and regulatory framework. This is in turn is set within the agreements that the UK has made for its pooled environmental policies within the EU, where it has consistently been in breach of air quality standards[207].

Example 9: Nottingham work place parking levy

Using national powers in the Transport Act 2000, Nottingham City Council (NCC) agreed to implement a workplace parking levy in 2007 and this was implemented in 2011. The levy charges £387 pa (inflation linked) for each space to employers with more than 11 parking spaces. At the same time, NCC has improved public transport into the city centre through the more services and support for employers to implement travel planning for their employees. Since 2000, NCC has experienced an 8% reduction in car use in the city centre.

Source: Follett 2017

While councils can introduce work place parking restrictions and low emission zones. They are not able to introduce national schemes such as vehicle scrappage which must be implemented by the government, although some car manufacturers are introducing schemes voluntarily. However, where cities are responsible for buses and taxis, they can commit to ensure that the fleets used in their areas are low emissions and provide incentives, direct investment and regulatory requirements to improve the quality of these vehicles on their roads. Councils can also adopt clean air zones and work with all employers to develop travel plans for all their employees.

Planning is also concerned with enforcing planning regulation where necessary. This is undertaken through enforcement activity and in Edinburgh, planning enforcement officers are using a variety of methods including aerial photography and Google Streetview. Drones are also being used to collect data and evidence to investigate and to support action. This is also allowing councillors to view sites without having to make specific site visits. It is also thought that drones can assist in building regulation and archaeological evidence gathering[208].

Conclusions

This chapter has demonstrated that the planning system within the UK is already structured in a way that is supportive to spatial scales and issues that have been identified as being significant within the NUA. Further the planning systems within all parts of the UK have recently been reviewed and the changes that have either been introduced or are proposed may align the UK systems further with the NUA. However, there are some areas where the planning system may need to be extended or changed to meet NUA objectives and these are particularly in the issues of land value capture, equity and managing change. Environmental standards may also need to be reinforced through planning processes. The use of big data together with digital mapping techniques may provide more evidence for the examination of outcomes and support policy priorities although some of these issues may need different legal frameworks or interpretation to ensure that applications work in practice. The customer-facing systems are advanced and are extensively used although some of these could be extended to provide a more uniform adoption of what can be offered though these means.

[206] HM Government 2014. Better Connected A practical guide to utilities for home builders https://www.gov.UK/government/publications/better-connected-a-practical-guide-to-utilities-for-home-builders .

[207] https://www.parliament.uk/business/committees/committees-a-z/lords-select/eu-energy-environment-subcommittee/news-parliament-2017/air-quality-directive/

[208] https://www.telegraph.co.UK/news/earth/greenpolitics/planning/11736149/Spy-drone-caught-builders-working-without-planning-permission.html ; https://www.telegraph.co.UK/news/2016/04/10/drones-to-check-planning-applications/ ; Neil Harris (2015) The Use of Surveillance Technologies in Planning Enforcement, Planning Practice & Research, 30:5, 528-547, DOI: 10.1080/02697459.2015.1076133 .

Chapter 6:
Managing the city:
experience in the UK

Introduction

Managing the city encompasses the whole range of services delivered by local authorities and other public providers operating at the local level including health. In considering the role of managing the city as part of the central priorities of the NUA, then the relationships between services, access to them – physical and digital, will have a strong set of links with spatial dimensions. Before 2000, access to public services was a key focus in UK planning policy and in determining applications for development. While Government planning guidance does allow for these standards to be included in planning practice, they are not as strong in the shaping of places as they were and may need strengthening as part of the NUA.

In terms of digital access, local authorities are using a range of smart tools to develop access to their services, work better with their neighbouring authorities and other public bodies in their areas. The Local Government Association (LGA) has been supporting the further development of tools at the local level through its Digital Experts programme launched in 2016[209]. Through this, 27 English local authorities have been awarded small amounts of development funding to support different improvements. Some approaches are innovations and development in customer facing services. In 2015 the LGA found, using SOCITM data, that most customer contact is now online for many councils. In some services, such as planning, over 70% of services are accessed online and 87% for libraries, museums and archives[210]. Further, this study also showed that when tracking the use of channels over time, there is a switch to online away from telephone hotlines and one stop shops and for some services the use of online reporting doubled in two years.

Managing the city – for individuals, communities and businesses

In managing the city, many local authorities and other public bodies have found that it is helpful to use digital tools to customise services and applications in ways that make sense to users. While there will be overlapping memberships, it is still useful to group services together for ease of access. The next section considers some examples of the way in which local authorities and others have approached this.

Individuals
Citizen accounts

In 2014, 32% of local authorities had customer accounts and single-sign available for individuals living in their areas[211]. Local authorities have designed specific account structures for their citizens to enable them to access services and manage their information. By 2019, local authorities expect two thirds of services to be available online[212]. In Scotland, there is an account available to all citizens that by August 2018 has established a sign up of over 500,000 users which is almost 10% of Scotland's population. This account allows people to

---

209   LGA Digital experts programme https://www.local.gov.UK/our-support/efficiency-and-income-generation/digitalisation/digital-funded-programmes
210   https://www.local.gov.UK/sites/default/files/documents/delivering-better-local-o-46b.pdf
211   Socitm Better Connected survey 2014 https://www.localgov.co.UK/Personalised-self-service/38403
212   C:\Users\Janice\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\86UC5QI1\email (003).mht

access both central and local government services though the same sign on[213]. The *myaccount* service can be used to access National Entitlement cards for travel[214], access to benefits[215], reporting missed services such as refuse collection and seeking money advice[216]. The service provides advice for potential service providers that might want to include their service within the *myaccount* service[217] and for citizens who want to know more about it.

In England there are other examples where local authorities have established personalised citizen accounts as part of self-service delivery[218]. In the London Borough of Sutton, it is possible to sign up to an account that will manage council tax, housing benefits and business rate[219] and in Cheshire East, with a single registration process[220], citizens can obtain:

- Full statement of account
- List of payments
- Instalments to be paid
- Benefit, Discount and Exemption details
- View & print bills (Adobe PDF versions)

When the LB of Newham introduced their single sign on in 2013, there were 9% of the population using online self-service which had grown to 50% by 2014, with some services e.g. visitor parking permits rising to 99% online self-service[221]. In South Ribble, all members of the population have been offered a self-service account which have already been well used and been cost efficient for the council[222]. Some councils, including Amber Valley, bring together information about each property in their area including the planning history, waste collection and access to services around the property[223]. The London Borough of Hackney is using data science to enable it to support individuals to predict when individuals may need support and are particularly looking at when they may be falling into rent arrears[224].

Change of address

The TellUs Once project which has been led by central government departments is one where there is a single notification of death or birth that can inform all relevant agencies. Since being introduced by local authorities in 2011, it is now used by 90% and there is a take up of approximately 75%, with a 98% customer satisfaction rating. This service allows issues to be resolved and stops different public bodies continuing to mail or try to contact people after they have died[225].

Reporting issues

Some local authorities have developed systems that allow people to report problems through a variety of channels. Lewisham Borough Council in London has developed a combined Report where any issue can be reported including those that need repairs or other action or issues of air quality[226]. In other more rural locations such as East Riding of Yorkshire, community hubs in villages offer online face to face services[227]. Some local authorities like Bristol City Council are also using reporting systems for their staff to use when they observe things that need attention using an application that has been developed by another local authority Kirklees[228] and is now widely used by a range of public organizations.

Personal support

In order to support older people or those with disabilities, a range of technology is being used form wearable aids and smart rooms that can detect movements or falls to robot animals that can provide some company and robots can also provide other support such as lifting people[229].

213   http://www.improvementservice.org.UK/myaccount.html
214   http://www.improvementservice.org.UK/documents/myaccount/case-study-data-hub-jan17.pdf
215   http://www.improvementservice.org.UK/documents/myaccount/CEC-myaccount-case-study.pdf
216
217   https://spportal.mycas.org.UK/
218   https://www.localgov.co.UK/Personalised-self-service/38403
219   https://www.sutton.gov.UK/myaccount
220   https://myaccount.cheshireeast.gov.UK/
221   https://www.localgov.co.UK/Personalised-self-service/38403
222   https://www.localgov.co.UK/Personalised-self-service/38403
223   https://www.ambervalley.gov.UK/utilities/my-property.aspx
224   https://futurecities.catapult.org.UK/2017/10/23/blog-city-authorities-building-intelligent-services-data/
225   https://www.local.gov.UK/sites/default/files/documents/transforming-public-servi-80e.pdf ;
        http://www.wandsworth.gov.UK/info/200508/deaths/1748/tell_us_once
        https://www.clacks.gov.UK/regulation/tellusoncebirth/
226   https://www.lewisham.gov.UK/doitonline/report-it/Pages/report-it.aspx
227   https://www.local.gov.UK/sites/default/files/documents/transforming-public-servi-80e.pdf
228   https://www.local.gov.UK/sites/default/files/documents/online-reporting-bristol--2d4.pdf ; https://about.lookinglocal.gov.UK/
229   https://www.theguardian.com/technology/2016/nov/06/robot-could-be-grandmas-new-care-assistant?CMP=Share_AndroidApp_Gmail

Healthcare

The most obvious use of smart technologies in the local health setting is the use of practice management applications in primary care. Packages such as the widely used EMIS[230] permit in the primary care setting, patient electronic communication, access to the patient's medical record and the ordering of repeat prescriptions. There are similar systems for use in community and mental health settings and in hospices. The use of such systems is widespread but not uniform and some aspects of the application may be disabled if the practice is not organised to exploit them. For patients with cell phones, GP practices can message appointment reminders and patients can reply with appointment confirmations. Dental practice systems such as Exact[231] also have patient messaging systems (SMS) for reminders and patient feedback.

These local applications have arisen in the context of a long history of national programmes within the NHS (see chapter 4). Much of the emphasis is on caring more efficiently for an ageing population and improving the use of care homes as these can substantially reduce the costs to the NHS of bed blocking.

The negative health effects of loneliness and social exclusion are being tackled by several local authorities. Bracknell Forest's Warm Welcome programme[232] uses an interactive 'Community Map' to encourage links between community groups and potential local users. It is regularly updated and is popular. It is, however, recognised that the elderly and those with learning disabilities may find it difficult to use. The elderly were found to be quite familiar with GP practice touch screens and this means of access is being explored under the NHS/LGA 2018 Social Care Digital Innovation Project. Some potential users with learning disabilities were found to prefer a digital to a face-to-face connection and others were found to have better digital skills than their parents/carers. The project was preceded by a period of research into user needs[233] as part of its bid to the national Social Care Digital Innovation Programme.

An NHS capacity tracker[234] is in use in the north of England and is supported by the North of England Commissioning Support Unit. The tracker provides hospital staff with immediate information on the availability of care home beds and supports central reporting.

In the Bradford and Airedale area the local authority, Airedale Hospital and local GPs and care homes have partnered to set up a central database of clinical records to facilitate telemedicine for care home residents and the wider community including prison and youth offender institutions. The costs of providing the service at an individual level have proved high but a more cost-effective service continues for institutions[235].

In Hertfordshire the problem of falls amongst the elderly is being tackled with the help of sensors that test the speed with which an individual can get up from a chair. This gives an assessment of their strength more quickly than manual tests and helps in the design of a personal exercise program. Initially funded through NHS England with local authority and local NHS support[236] it is now being supported through the Hertfordshire Care Providers Association (HCPA)[237].

Moorfields Eye Hospital in London is applying Artificial Intelligence to the diagnosis of eye disease in association with UCL and DeepMind Health. The system has a diagnostic capability matching that of leading experts[238] as reported in Nature[239].

The North West London Collaboration of Clinical Commissioning Groups currently seeks to integrate health and social care information on patients across NW London in its Whole Systems Integrated Care (WSIC) programme. The analysis of this data is presented on dashboards in local care settings and gives alerts to identify patients for targeted care in response to data

230 https://www.emishealth.com/products/emis-web/
231 (https://softwareofexcellence.com/nz/product/exact-practice-management)
232 http://health.bracknell-forest.gov.UK/warm-welcome/
233 https://www.local.gov.UK/sites/default/files/documents/Bracknell%20Forest%20-%20Discovery%20phase%20review.pdf
234 https://www.necsu.nhs.UK/services/system-wide-transformation/capacity-tracker)
235 https://www.local.gov.UK/bradford-and-airedale-region-working-nhs-provide-telemedicine
236 https://www.local.gov.UK/hertfordshire-county-council-using-technology-reduce-risk-falls
237 https://www.hcpa.info/stopfalls/
238 https://www.moorfields.nhs.UK/content/breakthrough-ai-technology-improve-care-patients
239 (Jeffrey De Fauw et al., (2018) Nature Medicine vol 24, pp 1342–1350

coming in from different care settings. This helps break down care silos and gives a more comprehensive view of patient needs to a wider range of providers[240]. The WSIC programme now forms part of the One London Local Health and Care Record Exemplar programme[241] together with similar projects in Manchester and Wessex[242]. However, these are part of a wider trend of cooperation at a regional and sub-regional level to use centralized databases for the sharing of this kind of data in for instance Leeds (where Leeds City Council[243] is working with the Leeds NHS organizations and the voluntary sector to share information effectively. Bradford and Airedale mentioned above are seeking to extend their information sharing.

Families

The Improvement service in Scotland has introduced a Parentsportal (parentspartal.scot) to enable parents to communicate more easily with their children's schools. After an examination of the methods of communication together with research about what parents required, the Improvement Service found that parents were not satisfied with the current methods of communication that they had and that they found school web sites difficult to use. Parents also wanted more information about the homework tasks for their children. The research found that parents would prefer to receive communication from the school by email as this would mean that they did not have to search for letters in their children's school bags. In addition, parents requested the opportunity to book for events and other activities online as well as paying for activities and trips in this way. The parents-portal was regarded as being more convenient, providing more information and being a one stop shop while also providing parents with more information about their child's learning. However, there were concerns about those parents that did not have access to a computer at home and could not use the facilities in the library. There were also concerns about teacher workloads in providing this information. After this research, the parentsportal.scot was developed and went live in August 2018[244].

Access to Wi-Fi

The development of digital approaches for individuals include the provision of broadband across all locations supported by Wi-Fi on public transport and in public places. Information on smart journey planning for travel between two places is now supported by a variety of applications that can be used on smart phones and through Google searches which provide walking, public transport, cycling, car and taxi information for any journey between two points always of the day and days of the year. Where buses are enabled with GPRS this information is in real time while Sat Nav applications provide information on the best routes under current conditions. There are also specific approaches for more rural areasl[245] where fixed bus timetables can be replaced by more specific services to support market days or leisure events[246]. Some communities are also running bus services directly[247]. Journeys can be booked for Dial-a-ride[248] or voluntary services for journeys to health appointments.

Managing the city for communities

Local authorities engage with their communities in a variety of ways. In Northumberland, each locality has its own part of the Council's website where people can see what is new for their area and they can drill down to street specific information[249]. This service also includes real time alerts and notification of meetings. In the Royal Borough of Kingston upon Thames there is a community newsletter available and it is possible to join your community's Facebook group, find volunteering opportunities or apply for a grant[250].

Some communities have their own online portals which may be able to support local activities and volunteering but may also support more formal activities such as the parish council or neighbourhood for a where they are undertaking a parish plan. Hook Norton[251] has a web site that includes local information, details of services, a directory and local events. Belton in Rutland includes articles for sale and a history of the village[252].

240 https://digitalhealth.london/casestudy/case-study-whole-systems-integrated-care-wsic-dashboards/
241 https://digitalhealth.london/one-london-local-health-and-care-record-exemplar-creating-the-data-sharing-ecosystem
242 https://www.england.nhs.UK/london/2018/05/23/lhcre/
243 https://www.leedscarerecord.org/
244 http://www.improvementservice.org.UK/parentsportal-ready-to-go-live.html
245 https://www.dalesbus.org/
246 https://www.ordnancesurvey.co.UK/business-and-government/case-studies/shropshire-council-rural-bus-services.html
247 https://www.theguardian.com/commentisfree/2018/jun/06/rural-town-austerity-buses-witney
248 https://tfl.gov.UK/modes/dial-a-ride/
249 https://www.northumberland.gov.UK/Home.aspx
250 https://www.kingston.gov.UK/
251 https://hook-norton.org.UK/
252 http://beltoninrutland.co.UK/

Managing the city for businesses

The UK has more enabled business than other countries in Europe and the highest percentage of individual internet use of any G7 economy[253]. In managing the city what is being done to optimise it for business growth and development? The role of broadband and the 5G roll out in 2020 will have a significant role in supporting both business development and the interaction between citizens as customers. It will also enable more to work at home or in non-workplace environments. This is equally important in rural as in urban areas. The Centre for Cites[254] argues that local authorities can do much to support and improve the operational environment for business by supporting access for infrastructure investment. It cites the example of the City of London, where the local authority has placed an emphasis on connectivity as one of its key priorities. For fixed infrastructure, it has published standardised wayleave document and toolkit to help building owners support improved access to their building by infrastructure supplier[255]. For mobile technology, the City of London Corporation has adopted a concessions model in 2017 which allows access rights to install and operate small cells on street furniture, rook spaces of corporate buildings and in return those using the concession must start delivering 4G, and free Wi-Fi 5G in the City of London. The government has also established a 5G Urban Connected Communities competition which has been won by the West Midlands[256].

Many local authorities have been developing programmes and initiatives to support local businesses and start-ups. These approaches have included a variety of approaches such as the improvement of basic digital infrastructure to skills development. Through the Bristol is Open programme, which is joint venture between the City Council and Bristol University, a research and development programme with local partners and businesses is being supported which has included sensors in the home and a local power cooperative[257]. In Salford, the Mayor has launched #Digital Salford[258] which includes a Digital You programme[259] which is helping people improve their skills, use services online and are supported by local digital champions.

Managing the city – public services

The city is managed though a range of services and each of these will have their own front and back office systems and the ways in which they capture and apply data. In some services, there has been considerable effort to join up either at the front customer facing end or in back office systems. These may be to support efficiency for users and organizations owning the systems and they may also be used to minimise the success of these seeking to abuse the systems to obtain more financial or other services from the state[260].

253 https://www.socitm.net/publications/smart-places-guide-4-changing-the-nature-of-local-government
254 http://www.centreforcities.org/publication/how-cities-can-make-the-most-of-digital-connections/
255 https://www.cityoflondon.gov.UK/business/commercial-property/telecommunications-and-utilities-infrastructure/Pages/wayleaves.aspx ; https://news.cityoflondon.gov.UK/standardised-toolkit-helps-london-businesses-get-faster-access-to-broadband/
256 https://www.gov.UK/government/news/west-midlands-to-become-UKs-first-large-scale-5g-testbed
257 https://www.bristolisopen.com/overview/
258 https://www.salford.gov.UK/digitalsalford
259 https://www.salford.gov.UK/digital-salford/digital-you/
260 https://www.ealing.gov.UK/news/article/1335/london_boroughs_launch_counter-fraud_hub

Police and judicial services

One of the key concerns in the management of justice is the speed with which the court system works. There are issues in the operation of the UK court system where witnesses do not appear and much time is wasted for police officers and others. To support change, there have been trials of video enabled justice that allow police officers to give evidence without leaving their police stations, although this will depend on the reliability of the court scheduling of cases including the use of software to enable this[261]. This approach has also been trialled over a wider geographical area in Sussex. It has included more proceeding types to overcome some of the problems found in the first pilot. With the use of this system, it is expected that defendants will also spend less time in custody. While this approach will not be appropriate in all circumstances, its use may be beneficial to the police, defendants and victims in a range of cases.

Transport and infrastructure

Roads

Local authority Directors of Environment, Economy, Planning and Transport (ADEPT), its SMART Places Research Programme, is funded by the Department for Transport and has been developed in partnership with Atkins, EY, Kier, Ringway and Telefonica. Three prototype projects have been created to harness the power of data, develop a knowledge aggregator and run 'live labs' on local roads[262].

Parking

It is common that local authority on-street parking payment is through smart phones. The City of Westminster has been developing an app that guides drivers to parking space and then takes payment for parking from their phone[263].

Electric charging points

The provision of electric charging infrastructure through the provision of charging points is part of local planning policy where there are development applications for residential, retail and employment land uses. The legal basis for the provision of charging points was made in 2011 through a change in the General Development Order[264]. In London, minimum standards have been set that require both active and passive provision[265]. Developers providing charging points in this way are encouraged to join the source London network[266]. The approach to providing electric charging points is also part of the government's air quality strategy to move to zero carbon emissions on the UK's roads[267].

Real time bus information

In July 2018, the UK government launched a consultation to require bus companies to share their real time bus data in England. This consultation also proposes that there should be visual and audio information on each bus[268]. Where real time bus information has been provided in Reading, there has been a 48% increase in bus ridership since 2009.

Travel planning

Helping people to plan their journeys using smart travel tools is a well-established approach in many countries. Providers such as Google and City Mapper offer real time travel information for a range of modes including walking, cycling, car, bus and train. Others are offering personalised approaches to people like Smart Cambridge's app Motion Mapper which can be used in smart phones and on screen across the city[269]. Smart Cambridge has an Intelligent City Platform using Google transit, Twitter feeds and weather reports[270].

Freight

The role of freight including the last mile delivery is becoming more important with just in time supply chains for food retailing and manufacturing and for delivery of consumer goods bought online. The role of major freight transport hubs connected by rail, road and sometimes shipping as in London gateway

261 http://www.reform.UK/wp-content/uploads/2016/02/Digital-Justice_WEB.pdf
262 https://www.transport-network.co.UK/ADEPT-invites-bids-for-25m-digital-innovation-programme/15251
263 https://www.publictechnology.net/articles/news/councils-urged-bid-traffic-tech-funding
264 https://www.planningportal.co.UK/directory_record/610/si_2011_2056_-_the_town_and_country_planning_general_permitted_development_amendment_england_order
265 https://tfl.gov.UK/info-for/urban-planning-and-construction/transport-assessment-guide/guidance-by-transport-type/electric-vehicle-charging-points
266 https://www.sourcelondon.net/
267 https://www.theguardian.com/environment/2018/jul/09/electric-cars-vehicles-UK-plan-more-charging-points-chris-grayling
268 https://www.gov.UK/government/news/real-time-information-to-transform-bus-travel-in-england
269 https://www.transport-network.co.UK/Cambridge-gets-smart-with-journey-planning-tools/15120
270 https://www.socitm.net/publications/smart-places-guide-2-transport-and-mobility

provide an everyday feature of life with some manufacturing plants in the automatic industry receiving 1,000 deliveries of components per day. While major companies are improving their supply chains and delivery systems, it is in the last mile delivery that many new smaller businesses have grown up to meet the demand. A research project underway at UCL CASA is identifying current practices of delivery, the structure of the market and the effects on congestion[271].

Street lighting
Several street lighting providers are branding their products in ways that align them with smart city activities. In including cameras and other technology such as that for air quality, street lights can become a way of offering regular access to real time data that can be accumulated into big data sets over time. This can provide details of how places are responding in different circumstances and be a means of supporting other policies such as community safety. The lights can also be managed in ways that make them more energy and environmentally efficient[272].

Using transport to support innovation companies
The London Midland train company has been working with a Labs Accelerator to support ten hi tech start-ups that are focused on improving all aspects of customer experience[273]. The start-ups selected receive a range of benefits including:

- Access to industry-leading knowledge
- A free rail pass for 6 months (London – Birmingham – Liverpool)
- Free workspace in the dedicated Lab space
- Access to the latest hardware and software for piloting and prototyping
- Access to London Midland customers, train and passenger data

Broadband access
In considering ways in which the planning, management and government of the city can be supported though technology, a key factor is the provision of broadband access in all locations. In the UK, the Government has made a commitment to equality of access in all places but there is less detail on the programme for delivery[274]. The Government expects to achieve an initial minimum speed of at least 10 Mbps (megabits per second) by 2020 under the new "broadband universal service obligation"

(USO). At the local level, Peterborough won the Smart City of the Year 2015 award for its work on the Peterborough DNA project which has included the provision of a city-wide fibre network and has connected public bodies[275]. Peterborough has also committed to the circular economy and is preparing a range of case studies to demonstrate how this is being delivered in practice. Peterborough also has made progress on data sharing and established an urban observatory[276].

Local authority uses of technology to provide energy

Forest Heath Council in Suffolk is one of the largest local authority solar power farm owners in the UK that has generated more than £1.3m in its second year of operation. The local authority invested £14.6m to acquire the farm in 2016 and it has already performed marginally better than anticipated and it is expected to provide a 5% return after ten years of operation[277].

Using the Internet of things (IoT)

Some local authorities will be piloting the application of the IoT to help make their cities more efficient and use their infrastructure assets more effectively. Aberdeen and Bradford are joining other European cities as part of a European project that will be including interactive dustbins that can sense when they are full, intelligent car parks that can highlight empty spaces and real-time flood-warning information data[278]. The project is also aimed at reducing operational costs for local authorities.

The City of Manchester has put together a range of experimental services that support citizens using the IoT under the banner of CityVerve[279] and as part of its Smart Cities programme. CityVerve is based on an open platform and is developing projects within four areas – Health & Social Care, Energy & Environment, Travel & Transport, Culture & Public Realm. The projects are also tested by the community as well as providing community platforms and fora for community groups[280].

271 https://www.ucl.ac.UK/bartlett/casa/research/current-projects/freight-traffic-control-2050
272 https://www.bbc.co.UK/news/business-37522674
273 https://businessbirmingham.com/london-midland-labs-seeks-innovative-startups-for-transport-experience-accelerator/
274 https://www.bbc.co.UK/news/UK-36900892
275 http://www.futurepeterborough.com/
276 http://www.futurepeterborough.com/digital-innovation/ ; http://www.futurepeterborough.com/cranfield-university-analysis/
277 http://www.eadt.co.UK/business/forest-heath-council-paid-14-5m-to-buy-toggam-farm-lakenheath-1-5640953 ; https://www.socitm.net/publications/smart-places-guide-5-environment-and-energy
278 https://www.bradford.ac.UK/news/2017/score-research.php
279 https://cityverve.org.UK/what-is-cityverve/
280 https://cityverve.org.UK/project/culture-and-public-realm/

The community activities supported by CityVerve are also using experiments with gamification to assist engagement with citizens and communities. The Community's wellness is also a priority in the health and wellbeing strand of work and using the IoT, the projects are exploring ways of providing nudges to citizens to improve their health and wellbeing for both physical and mental health. This includes the promotion of walking and the reduction of loneliness. The health and wellbeing project also includes the management of chronic conditions through medication and activities that help to manage it.

The transport and travel set of projects include a range of projects including 'talkative bus stops' that allow those waiting for a bus to communicate with bus drivers, using sensors to improve road safety, smart traffic and parking[281]. The last group of projects is concerned with energy and the environment. These projects are focused on the buildings in Manchester and retrofitting them to make them smart in the use of energy[282]. The projects also cover the cost of regulatory compliance, cleaning of buildings, air quality and contributions that buildings can make to the energy grid. All these projects are being developed and delivered by a range of partners in the city of Manchester including the local authority, a university and private sector partners.

There have also been other application and use of the IoT. At London City Airport, there were three projects. The first was to review passenger flows, the second was to keep track of the airport's moveable assets like equipment and the third was to offer passenger notification[283]. The project to understand passenger movements was subsequently discontinued.

The role and use of big data in managing the city: Local authority data stores in the UK

Glasgow

Glasgow open data[284] has been established by Glasgow City Council. Its data sets are grouped into ten themes as shown in Box 6.1. The individual data sets in the repository must be opened and downloaded individually and do not appear to have any mapping capability. They are also more information focused such as indicating railway station facilities for the disabled rather than being a specific data set that could be used for wider purposes.

Box 6.1: Glasgow open data themes

- Community
- Culture leisure sport
- Business and finance
- Education
- Environment
- Governance and democracy
- Health and social care
- Justice and public safety
- Population and society
- Transport

The London Datastore

The London data store[285] is owned and managed by the Mayor of London. It is also supported by the London office of Data analytics (LODA) is also run by the Mayor[286]. The purposes of LODA are shown in Box 6.2. LODA objective is to provide services for the 32 London boroughs so that projects can be undertaken openly and for the wider benefit if London. In particular, LODA is established to provide expertise, project management, technical support and legal support particularly on information governance. Its work is managed by a board that includes representatives of the London Boroughs and an academic.

---

281   https://cityverve.org.UK/project/travel-and-transport/
282   https://cityverve.org.UK/project/energy-and-environment/
283   http://www.totalbluesky.com/2015/03/10/future-iot-airports-lessons-london-city-airport/
284   https://data.glasgow.gov.UK/
285   London Data Store https://data.london.gov.UK/
286   London office of Data Analytics (LODA) https://data.london.gov.UK/

Box 6.2: London Office of Data Analytics (LODA) objectives and challenges

Objectives:

1. Strengthen London's approach to data management and sharing; so that

2. The value of data can be maximised, and we can advance the use of data science in the capital.

Challenges:

1. Data-driven services for citizens, designed and commissioned around their needs;

2. Efficiency gains for public services; and

3. Fresh insight into how broader urban challenges like air quality can be tackled using new technology.

Source: https://data.london.gov.UK/loda/

The London Datastore puts its data into nine themes that are shown in Box 6.3. The data sets provided in the data store are composites for London and do not have a facility to map or analyse them. They are therefore useful in comparing London with other cities or places within London with the overall average.

Box 6.3: London Data Store Themes

• Jobs and economy

• Transport

• Environment

• Community safety

• Housing

• Communities

• Health

• London as a world city

• GLA performance

Figures below (London Data Store).
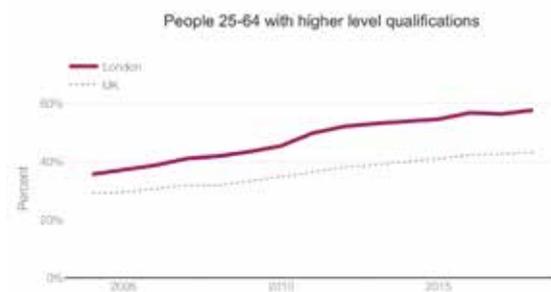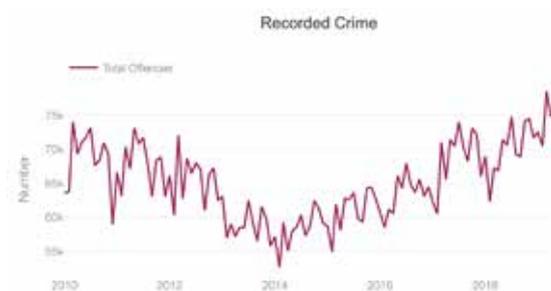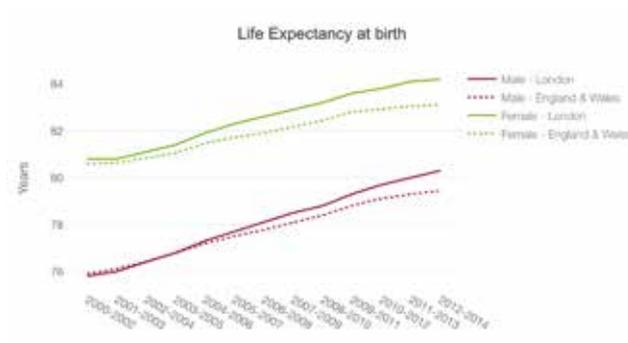
Please note the Greater London Authority cannot warrant the quality or accuracy of the data.

Whereabouts London

Whereabouts London is an open data store that has been established to understand how open data might be used for cities by the Future Cities Catapult (FCC), funded by the UK Government and EU[287]. Whereabouts London uses data from the London Data Store together with other publicly available data sets and merged them together in an interactive map. The Code generation for Whereabouts London has also been released under an Open Source licence so it can be used by those wanting to develop applications.

Data Mill North

Data Mill North has grown out of the Leeds City Data Mill[288] and is intended to be a data store for the whole of the North of England. It is similar in its layout to the Boston Data store with an emphasis on the ways in which data is being used by the private sector and others to generate applications. The data is kept within 12 different themes that are set out in Box 6.4. The data sets have raw data within them and in the current set up it is not possible to manage or analyse them, as in the Bristol open data store. The data sets indicated when they have last been updated but some only appear to give some of the information required that is where the air quality monitoring stations are rather than the current readings. The site does offer dashboards for two cities, Bradford and Leeds although the Leeds city dashboard was not functioning when it was viewed for this report[289].

Box 6.4: Data Mill North Themes

- Local services
- Transport
- Geospatial
- Health
- Business and economy
- Education
- Housing
- Art and culture
- Tourism
- Licences
- Sport
- Transparency

Source: https://datamillnorth.org/dataset

Bristol

Open Data Bristol[290] has been set up by Bristol City Council to enable the wider use of data that it has collected together with that provided from other sources. It has grouped its data sets under headings that are shown in Box 6.5. For each source it is possible to view the data as a table, to map it, to analyse it, to export it or use as an API. The ability to map all the data sets. The data on land and buildings shows that Bristol City Council holds records for over 35,000 assets. It is possible for those interested in induvial data sets to sign up to receive information when they are updated.

Box 6.5: Open Data Bristol data themes

- Environment
- Transport
- Council and Democracy
- Consultation
- Planning and Land use
- Health and social care
- Energy
- Leisure and tourism
- Business and economy
- Connectivity
- Education
- Safety

Source: Open Data Bristol

Milton Keynes data hub

The Milton Keynes data hub brings together data form across the local authority area using smart APIs to 're-deliver the data in a common, homogeneous and convenient way for the developers of data-intensive applications' and 712 data sets in all[291]. The data is provided in a variety of ways including under different topics, for localities and timelines.

London Borough of Newham

The London Borough of Newham opened their data warehouse and business intelligence programme in 2016 when they brought together data from across the whole local authority so that they could use it for predicative analytics. The services that they are prioritising are fraud detection, landlord licensing charges, and triage within Children and Young Persons Services[292].

---

288 Data Mill North https://datamillnorth.org/ ; https://www.socitm.net/publications/smart-places-guide-7-people-and-communities
289 Leeds City Dashboard http://dashboard.leedsdatamill.org/ .
290 Open data Bristol https://opendata.bristol.gov.UK/pages/homepage/
291 http://www.mksmart.org/data/
292 https://futurecities.catapult.org.UK/2017/10/23/blog-city-authorities-building-intelligent-services-data/

Managing data safely

In all public bodies there is a balance between protecting information provided any individuals and organizations and making information available in ways that it can be used to society's benefit. In their efforts to provide this support to meet this dual challenge, central government has a key role in both protecting the country's security but also creating an operational framework that is both secure and accessible[293].

Procurement

One of the ways in cities can manage their services and offer opportunities to a wider number of suppliers is through online procurement. This is also one of the EU priorities for online public services. By moving to online procurement platforms, it enables more knowledge for suppliers and can provide considerable savings for individual local authorities when purchasing goods and services[294]. In some cases, these savings have been associated with the local authorities' ability to do more to develop the service specification in ways that have led to more efficient delivery methods for example for waste collection[295].

Conclusion: The challenges of NUA delivery and managing the city

While planning the city is important, the city also must be managed to ensure that it can provide good living and working places as well as sustainable access between them. As this chapter has shown, there are many differ smart methods that are being used to support the management of cities in the UK and these are particularly developed in some areas such as transport. While planning can contribute support for the way in which new buildings function, the performance of existing buildings can be significant. While it is possible to examine heat loss in buildings for example using thermal imaging this is not always joined up with policy actions to improve building efficiency as part of a programme of city retrofitting. Cities also need to consider how services are provided and whether there are locations which are less well served for transport or other facilities and digital methods can be used to make these assessments on how these services are provided and managed although there also needs to be policy leadership from the democratically elected leaders.

The NUA also seeks more integrated approaches to managing the city and this may be more challenging as services are provided within silo-structured organisations or lack of joined up working between organizations and localities. The approaches to strategic planning in the national planning Policy Framework in England and the National Infrastructure Commission's approach to integrated planning and delivery may go some way to bringing this city's management within a more integrated framework for investment, delivery and management.

---

293 https://www.nao.org.UK/wp-content/uploads/2016/09/Protecting-information-across-government.pdf
294 https://www.local.gov.UK/sites/default/files/documents/transforming-public-servi-80e.pdf
295 https://www.local.gov.UK/national-procurement-strategy/making-savings

Chapter 7:
Governing the city:
experience in the UK

Introduction

The NUA is committed to strengthening the capacity of local governance to work together to deliver services across administrative borders within functional areas. As noted in Example 7, shown earlier, these functional areas can be defined in several ways and the patterns of governance that can accompany them will vary. As this chapter demonstrates, there are already a range of UK smart governance tools that can support the delivery of the governance objectives in the NUA and these can be further developed. Some areas have already established governance models at a strategic level supported by the Government such as the West Midlands[296], Greater Manchester[297] and West of England[298] Combined Authorities. In addition to London, there are nine combined authorities and 35 other cities which have been defined as primary urban areas in the UK[299]. Even where these do not have formal governance arrangements, the role of strategic planning and infrastructure delivery is bringing them together in decision-making partnerships.

Governing the city requires decision making on policy priorities, the use of resources including spending and staff decisions and monitoring progress in achieving the objectives set out for the place. SOCITM, the society of public sector IT managers has argued that by implementing an agenda of smart places, can change the nature of government[300]. In terms of making decisions for investment in IT and technology to support new ways of undertaking public management, there are also decisions to be made about how services will be delivered. In the public sector, the role of outsourcing as a means of delivery has been growing with customer services accounting for 46% of public sector business service outsourcing in 2017, although the number of outsourcing deals within the UK public sector fell to 98 in that year compared with 165 in the preceding year[301].

City leadership

The creation of new Combined Authorities with directly elected Mayors in England has meant that there is now strategic leadership of the use of digital technologies to support local communities and businesses. The Mayors are also able to negotiate growth and devolution deals with the Government, many of which have included digital elements within them[302]. Some Mayors have established data repositories as discussed in chapter 6. The Mayor of London has a repository while others have focused on leadership activities with the city's partners. In Greater Manchester, the Mayor has held two tech summits since being elected in 2017 and in London, the Mayor has held a civic innovation challenge to support changes in public service delivery[303]. Some of the other Mayors have focused on the improvement of digital infrastructure.

In some Combined Authorities, the Mayor has been able to build on existing activities to improve the digital environment for businesses, universities and citizens using a range of funds including form the EU and the UK government. In Cambridgeshire and Peterborough CA, there is a programme of integrated projects which are all deigned to support the area[304]. This includes a range of connection improvements such as full fibre, 5G plans and connecting businesses and public Wi-Fi. It also includes projects to enhance digital capability in this area and to remove some of the barriers. To promote the future capability of the area, there is a smart city platform together with several smart transport applications. There is also an intention to work on health and smart living in the future. In removing barriers, there is a focus on connectivity and finding ways to share practices that have worked.

296   https://www.wmca.org.UK/
297   https://www.greatermanchester-ca.gov.UK/
298   https://www.westofengland-ca.gov.UK/
299   https://www.centreforcities.org/wp-content/uploads/2016/01/2016-PUA-Table.pdf
300   Smart Places; changing the nature of local government. Guide 1 Introduction
301   https://www.arvato.com/UK/insights/outsourcing-index/2017-full-year-review.html
302   https://publictechnology.net/articles/opinion/one-year-have-metro-mayors-delivered-digital-devolution
303   https://www.london.gov.UK/what-we-do/arts-and-culture/mayor-londons-civic-innovation-challenge
304   https://www.connectingcambridgeshire.co.UK/

In local authorities outside combined authorities there have been other initiatives. The leader of Glasgow City Council has announced a digital programme to support poorer families and children in school in developing digital skills and capabilities.

Taking part in urban governance

The establishment of governance structures for functional areas can be difficult. Levels of engagement in local decision-making and consultation are traditionally low and it can be challenging to increase these participation rates. Some local authorities are using social media and this can be most effective when there are concerns about services or local changes. For strategic decision-making which may be critical to investment then engagement by all sectors can be more challenging. In Greater Manchester, the Combined authority's web site invites other to consult them as an organization and includes a place where organizations can invite the mayor or deputy mayor to an event[305]. In West Yorkshire, the Combined Authority has a 'Your Voice'[306] portal where it is possible to register to engage with decision making in the area.

Local Digital Declaration

In July 2018, individual local public bodies were invited by the Government to sign up to the local digital declaration. The declaration[307] is called a common aspiration for the future of public services and it has as its objectives to:

- design services that best meet the needs of citizens
- challenge the technology market to offer the flexible tools and services we need
- protect citizens' privacy and security
- deliver better value for money

All local authorities are being invited to sign up to the declaration to commit to further collaboration. There is also a further commitment to design services around individual needs using open standards of software and a common data structure.

The central government department that has the responsibility for local authorities the Ministry of Housing Communities and Local Government has taken the leadership role in the adoption and toll out of this declaration. In future these declarations may be supported across functional areas.

Changing the way that cities work with their citizens

Some cities have focussed on changing the way that they work with their citizens. The City of Birmingham has had some specific problems with service delivery to the point that it has been the subject of an independent review to identify ways in which its services can be improved. In response to these reports, the council has adopted a Future Council programme as part of its improvement commitment[308] so that it can demonstrate to its residents how things are changing. As part of this, there is a digital approach to obtaining evidence from people about the services that they want and are using[309]. The City Council has prepared guides for all staff to use about the ways in which Future Council is to work[310].

The use of digital democracy in the UK

A study (2017) undertaken by NESTA UK has identified that at national level, the UK is behind other countries for its implementation of digital democracy[311]. While other countries such as Finland and Estonia have implemented more interactive methods of central government engaging with citizens, in the UK the Parliament has been developing an emphasis on the role of the use of evidence and fact checking.

There are several examples of the ways in which local authorities are engaging with citizens using digital means. *Let's Talk Newcastle* is a council website that gives people the opportunity to comment on the council's priorities and how it spends its money[312] . The website includes all the traditional consultation offers form the council and includes other Council news and specific locality-based consultations. It is also possible to view council meetings and discussion on the web in real time or subsequent recordings[313].

305   https://www.greatermanchester-ca.gov.UK/take-part/
306   https://www.yourvoice.westyorks-ca.gov.UK/
307   https://localdigital.gov.UK/wp-content/uploads/2018/07/declaration-jul18.pdf
308   https://www.connectingcambridgeshire.co.UK/
309   https://birminghamsmartcity.wordpress.com/
310   https://www.birmingham.gov.UK/downloads/download/825/future_council_workforce_contract_guides
311   https://media.nesta.org.UK/documents/digital_democracy.pdf
312   https://letstalknewcastle.co.UK/ ; https://www.local.gov.UK/lets-talk-newcastle
313   https://plymouth.public-i.tv/core/portal/home ; http://www.waverley.gov.UK/info/200033/councillors_and_meetings/944/watch_council_meetings_online
        https://www.portsmouth.gov.UK/ext/your-council/councillors/watch-full-council-meetings-online ; https://www.salford.gov.UK/your-council/watch-live-council-meetings/

e-Voting

Since 2005, there have been several e-voting pilots in the UK, sponsored by the government. In the UK, voting at elections requires inclusion on an electoral roll but does not require any additional ID when presenting to vote, including the voting card that every individual is sent before an election. In promoting these pilots, there was an intention to attempt to increase voter turnout which has been historically low in local elections with the highest turnouts being for general elections for Parliament and more recently for the Brexit referendum. As the UK does not have an identity card system or digital identifier, any system for e-Voting may be subject to fraud or personation while online voting methods may not be sufficiently secure to prevent electoral tampering. At present the UK voters use paper and pencil methods.

Conclusions

The development of governance models within the NUA are a fundamental element in decision-making for these areas. As this chapter has shown, there is some preparation of the delivery of this objective in the Combined Authorities but less so elsewhere and this may be a major challenge. In the planning approaches discussed in Chapter 5, there are strategic planning requirements recently strengthened by government supported by commitments from the National Infrastructure Commission. However, the creation of new legally supported local authority groupings will need more leadership from government together with funding devolution for the delivery of strategic infrastructure and other investment.

Improving delivery of the NUA in UK local government using digital tools.

Chapter 8:
Spreading existing practice to support the delivery of the New Urban Agenda

Introduction

This report has demonstrated a range of activities and initiatives being pursued by UK local authorities which will support the delivery of the New Urban Agenda in the years to come. The role and use of specific assessment of progress towards achieving the NUA using a criteria-based approach for Functional Economic Areas may spread practices and support delivery outcomes in those areas that are included for measurement. However, in the UK, the understanding of the commitments of the country to achieve the SDGs in general and the NUA has been hampered by the Government's focus on Brexit. In other countries such as Australia[314] there has been a more dynamic approach as there has also been in the EU as a whole[315]. In this chapter, the requirements for greater roll out and use of the examples included here are considered. The next chapter considers what the research agenda could focus on in the UK to support the delivery of the NUA.

It is possible to see that the New Urban Agenda in the UK is potentially being supported by digital and smart cities approaches as shown in the tables on pages 83-84. However, there is a greater challenge in understating how they can be used more widely and consistently as part of the NUA national delivery programme and these issues are considered overleaf.

Leadership

For the NUA to be considered as a shaping force for UK public policy at the local level, there will need to be some leadership from central government and some from local government bodies. While the UK presented a common approach at the Habitat III event in Quito in 2016[316], the subsequent follow-up and implementation has been more sporadic. The leadership in Quito was the responsibility of the Government Department for International Aid which was appropriate when the Millennium Goals were in force but now that the SDGs are in place for all countries, this no longer appears to be appropriate. In Scotland, there has been a significant policy approach for the cities[317]

which began in 2016 and is focused on the development and delivery of inclusive growth. Without this leadership, it will take some time for the UK to engage with the NUA and there will be little encouragement to use the digital tools and examples that are already available to support this.

Incentives

In order to support the implementation of the NUA, there will need to be more incentives to local authorities to share and use the practices that are now available. The first incentive may be concerned with saving resources, not least as local authorities in the UK are losing their funding from central government in 2020. As this report has shown, there are several examples where local authorities have been able to improve customer and citizen service using digital means, but these are still available in a minority of local authorities. When SOCITM undertook annual service-based surveys on digital access to services, there were some incentives to focus at least on these services if not all as the results could be made public. Now that SOCITM has discontinued this work, it is unclear whether there will still be these invectives to apply better practices across all local authorities.

Other incentives could be provided by the Mayors of combined authorities who seek an improved and more even public service offer across their areas. Although these Mayors do not have responsibilities for local services, using specific initiatives and challenges they could attempt to incentivise authorities to come closer to best standards of delivery both within the area and nationally. Other incentives could be offered by Government departments through their agencies including LEPs although the funding that may be available will be expected to be reduced post-Brexit.

Finally, the criteria-based assessment for FEAs may also serve as some inducement to improve digital delivery if these factors are important for those companies seeking to invest in their area. Better standard of digital public service could provide a competitive advantage over other locations.

---

314   https://unny.mission.gov.au/files/unny/Habitat%20III%20-%20Statement%20on%20the%20New%20Urban%20Agenda%20%2019%20October%202016.pdf
315   https://ec.europa.eu/futurium/en/urban-agenda
316   http://habitat3.org/the-new-urban-agenda/preparatory-process/national-participation/united-kingdom-of-great-britain-and-northern-ireland/
317   https://www.gov.scot/publications/scotlands-agenda-cities/pages/3/

Increasing access

One of the key aspects of service delivery is to ensure that there is ease of access for those need the services. Until about 2000, there were public service access standards for fixed locations such as schools, doctors and libraries but these have been abolished. Between 2000-2005, there were e-service delivery standards. They could be reinstated and could include minimum standards for public service access online. The implementation of 5G across the UK could have a significant impact on a variety of public services and how they are delivered online and it is important to consider how these potential changes can be used to support access. A newly founded commission is taking evidence to consider access until 2070[318].

Communities of practice

One way of supporting the development and implementation of change through peer to peer example is through communities of practice. These may exist formally or informally but offer a safe space to discuss problems and issues of implementation. SOCITM offers this kind of facility to its members but there is nothing available for those seeking to support the delivery of the NUA and there may be value in establishing one that is accessible to practitioners.

Professional development and support

While the implementation of the NUA draws together a significant number of existing practices and helps to identify those locations were more needs to be undertaken, there will need to be some development and support provided by professionals and membership bodies in order to encourage this implementation.

UN NUA territorial and spatial planning (extracted SDG categories in bold)

Sustained, inclusive, and sustainable economic growth	Urban form, infrastructure, and building design	Cultural heritage and resilient infrastructure	Affordable housing and housing finance	Local economic development
	Peterborough http://www. futurepeterborough. com/project/instant-atlas/ Glasgow Oxford https://www. oxfordsmartcity. UK/cgi-bin/ urbandesigngroup.pl Bristol Manchester Greater London Authority	Glasgow Peterborough Oxford Bristol Manchester Southampton London England https://www.local. gov.UK/topics/ culture-tourism-leisure-and-sport/ good-practice-culture	Cardiff Cambridge and Peterborough CA West Midlands CA Greater London Authority Barking and Dagenham https://www. affordablelettings. london/	Peterborough Oxford Bristol Manchester Liverpool City Region CA http:// liverpoolcityregion-ca. gov.UK/100-day-plan West of England CA West Midlands CA Tees Valley CA http://smart specialisationhub. org/wp-content/ uploads/2017/06/ Mapping-Englands-Innovation-Activity-June-2017-FINAL. pdf

318   https://www.powertochange.org.UK/news/new-commission-launched-give-communities-control/

Continued – UN NUA territorial and spatial planning (extracted SDG categories in bold)

Stakeholder participation and collaboration	Integration of urban and rural areas through territorial systems	Networked urban and rural areas	Urban spatial frameworks, design, agglomeration, food systems, resilience and sustainability	Urban renewal, regeneration, extensions and neighbourhoods
Peterborough http://www. futurepeterborough. com/project/ customer-experience-programme/	Greater Manchester (Rochdale) Oxford https://www. oxfordsmartcity.UK/ cgi-bin/oxfloodnet.pl	DEFRA (air quality)	Oxford Manchester Greater London Authority Exeter http://www. exeterfoodnetwork. org.UK/sugar-smart/	Bristol Manchester
Oxford https://www. oxfordsmartcity. UK/cgi-bin/ innovativeoxford.pl		Greater Manchester CA		East Suffolk
		West of England CA		North Essex http:// www.ne-gc.co.UK/ about/
Bristol https://www. connectingbristol. org/bristol-refugee-hackday-get-involved/		Oxford https://www. oxfordsmartcity.UK/ cgi-bin/cobweb.pl		http://www. bicestervision.co.UK/ bicester-healthy-new-town-initiative/
Manchester http://open. manchester.gov.UK/				
Milton Keynes http://us2. campaign-archive2. com/?u=c4386cb 7d45 690f9ad65f 1f0d&id=9f4ebe6 63b&e=0144d171c0				
East Suffolk http://www. eastsuffolk.gov.UK/ community/				
Greater London Authority https://www.london. gov.UK/get-involved https://www.london. gov.UK/talk-london/				

Continued – UN NUA territorial and spatial planning (extracted SDG categories in bold)

Green and quality public spaces	Renewable and affordable energy	Adequate, inclusive, quality public services	Increase economic productivity	Promote full and productive employment
Ordnance Survey digital mapping <u>Greater London Authority</u> East Suffolk East Dunbartonshire Fife	<u>Glasgow</u> <u>Oxford</u> <u>Bristol</u> https://www.connectingbristol.org/smart-grids-help-us-reduce-energy-bills/ <u>Manchester</u> <u>Milton Keynes</u> <u>Exeter</u> <u>Sunderland</u> https://www.digitalcatapultcentre.org.UK/sunderland-smart-water-city/	Bristol Southampton https://www.southampton.gov.UK/roads-parking/travel/smartcities-card/ Exeter https://exeter.gov.UK/ Liverpool City Region Cambridge and Peterborough CA England https://socitm.net/location-intelligence	<u>Peterborough</u> <u>Oxford</u> <u>Bristol</u> https://www.connectingbristol.org/smart-city-district/ <u>Manchester</u> <u>Milton Keynes</u> <u>Exeter</u> Cambridge and Peterborough CA West Midlands CA <u>Greater London Authority</u>	<u>Bristol</u> https://www.connectingbristol.org/go-green-business-breakfast-science-happy-workplaces/ <u>Milton Keynes</u> <u>Exeter</u> Liverpool City Region Cambridge and Peterborough CA West of England CA West Midlands CA Tees Valley CA <u>Greater London Authority</u>

Responsible business environment	Informal economy	Higher productivity by transitioning to value added sectors	Urban demographic dividend	Ageing populations
<u>Peterborough</u>	<u>Greater London Authority</u>	<u>Glasgow</u> <u>Greater London Authority</u> https://www.london.gov.UK/node/33880 <u>Manchester</u> <u>Bristol</u> https://www.connectingbristol.org/business-want-work-us-UK-china-innovation-project/ <u>Milton Keynes</u>		<u>Peterborough</u> <u>Southampton</u> Bolton Harrow http:// healthcare.government computing.com/news harrow-and-ibm-to-build-up-health-and-social-care-technology-4999469

Chapter 9:
Filling the NUA gaps?
A research agenda

Introduction

On initial inspection of the SDGs and English local government responsibilities, it is likely that these characteristics will be based on the following summative qualities: To fulfil their responsibilities set out in the New Urban Agenda, cities will need to have some government arrangements that represent and reflect the city's area and influence and be:

1. Resilient

2. Environmentally sustainable

3. Participative

4. Informed

5. Adaptable

6. Efficient

7. Equitable

8. Healthy

9. Economically sound and capable of growth

10. Inclusive

11. Well governed

Where is more research needed?

- Bringing together a research programme on the NUA to consider where progress is being made and where there are **challenges in delivery**;

- Building on the work of the ONS[319] to understand how **measurement of fulfilment** of these objectives can work in practice particularly using digital methods. The role of the interactive digital reporting platform is useful[320] together with the detailed progress against each of the indicators[321];

- Understanding the **effects of existing practices** – do they help to achieve the objectives of the SDGs and NUA?

- How can **equity** be measured and action taken to improve spatial differences be assed and inform public policy and delivery?

- How can access to **housing** be considered within the existing planning and benefits framework? What are the outcomes of the Government's current approaches in England?

- What is known about existing state of housing in terms of room sizes, warmth and access to public services? How can this be developed and added into public policy decision making? How can **retrofitting** be included within planning policy and practice?

- How can digital methods and **local data stores** capture information about environmental, economic and social conditions and how can these be used to inform policy and delivery?

- Is there are need to reintroduce **public access standards** for example for transport, schools, libraries and green space and provide public access to data on current situation and which areas will need targeted action to bring them to national and international standards?

---

319 https://www.ons.gov.UK/aboutus/whatwedo/programmesandprojects/sustainabledevelopmentgoals ; https://consultations.ons.gov.UK/sustainable-development-goals/ons-approach-to-measuring-reporting-sdgs-in-the-UK/
320 https://sustainabledevelopment-UK.github.io/
321 https://sustainabledevelopment-UK.github.io/reporting-status/

• Is there a need to understand the implications of moving administrative and economic **boundaries** into alignment across the UK? What benefits might this bring?

• What would a systematic assessment of age and disability needs across the whole country look like? How could this be done and how could it be aligned with experience in practice of these in these groups?

• How can digital means help to support **governance** in functional areas and support wider engagement in decision making?

What kind of research approach is needed?

By scoping and reviewing existing research on these issues, how far could we identify local and neighbourhood smart monitoring and quality tools that would support gap analysis for further investment? It would some allow a form of evidence-based policy making and support an outcome- based rather than descriptive citizen and locality digital dashboard which can directly inform the achievement of the NUA. This approach would require some assessment and adoption of potential standards which can be open to debate but would allow for a demonstrator approach. This example is set out in Box 9.1.

In this research, it may be helpful to consider, drawing on CASA's repository and networks, what smart tools exist and are being used to examine and deliver some of the specific components. In taking one topic as an example, such as that for green space, what could we find from existing systems that help to identify

• the access, quality, quality and use of existing green space

• its contribution to well-being,

• influence of proximity to property values

• the contributions that it makes to mental and physical well-being and public health outcomes?

• How GIS and other smart tools have been used to both assess quality and quality and how they could be used to enable future policy programmes and delivery of the NUA.

Box 9.1: **Example: Scoping existing available smart data and analysis of urban green space in the UK**

Quantity, mapping and monitoring

• Research summary Urban green nation: Building the evidence base, CABE 2010

• *Valuing Urban Green Space: Challenges and Opportunities* UCL 2014

Quality

• Open Space Quality in Deprived Urban Areas: User Perspective and Use Pattern Abbas et al 2016

• The Value of Public Space How high-quality parks and public spaces create economic, social and environmental value, Cabe 2010

Distance/access

• 'Measuring Perceived Accessibility to Urban Green Space: An Integration of GIS and Participatory Map' Fariba Sotoudehnia, Lex Comber University of Leicester 2011;

• 'Using a GIS-based network analysis to determine urban greenspace accessibility for different ethnic and religious groups' Comber A., Brunsdon C., Green E., University of Leicester

• 'Nature Nearby' Accessible Natural Greenspace Guidance Natural England http://www. UKmaburbanforum.co.UK/documents/other/ nature_nearby.pdf 2010

• Rethinking urban green space accessibility: Evaluating and optimizing public transportation system through social network analysis in megacities Chen and Chang 2015

• Urban Green Space Accessibility and Environmental Justice: A GIS-Based Analysis in the City of Phoenix, Arizona, ShUK Wai So USC dissertation 2016

Physical health

• Green space access, green space use, physical activity and overweight Natural England Commissioned Report NECR 067 2011;

• 'Green Space and Health' Parliament POSTnote 538 2016

Mental health

• Access to Green Space in Disadvantaged Urban Communities: Evidence of Salutogenic Effects Based on Biomarker and Self-report Measures of Wellbeing, Ward Thomson et al 2014;

• Green space, mental wellbeing and sustainable communities Public Health England 2016