



Government  
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 Foresight

# Future of UK Cities: Three contrasting scenarios

Corinne Swain and Ine Steenmans  
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Future of Cities: scenario exercises

Foresight, Government Office for Science

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# I. Engaging with the future

In order to take action and shape the future, we need to imagine the future. As it can take many years to alter perceptions about the role of individual cities, and decision-making can be beneficially informed by evidence about long-term drivers and patterns of change from local to global scales. Greater clarity about aspired and desired directions of change to pursue; clarified assumptions of the ways in which the future might unfold; identification of opportunities previously not considered; avoidance of inefficient resource allocation; and early identification of risk are all possible outcomes of taking a systematic approach to imagining and thinking about the future.

Thinking about the future, however, is challenging. Not only can it be difficult to imagine how things could be different more than a few years into the future, it can be especially challenging to imagine a version of the future that is significantly different from the present. Even when we successfully imagine the details of a different future for one aspect of life in a city, e.g. new transport systems, it can often then still be challenging to complete this image of the future with details of other relevant city dimensions, such as the related changes in lifestyle, identity and governance systems.

There are different practical approaches to exploring the future of cities. The *Foresight for Cities: a resource for policy-makers* report provides an overview of some of the available techniques, as well as the types of insight that they can stimulate (see Foresight 2016b).

One of the better known approaches to exploring the future uses scenarios. Scenarios are contrasting versions of the future, typically produced by imagining the distinctive ways in which the future might look different if one or two significant drivers of change varied. The resultant stories, the scenarios, can then be used to sense check aspirations, and the actions and events that would drive change.

Scenarios do not have to be accurate representations of the future. Their value is derived primarily from providing a rich description of different versions of the future which are engaging to different and diverse stakeholder groups. They provide an imaginary environment within which we can more easily think laterally, test our understanding, and identify opportunities or ideas that may not yet have been considered.

The Foresight *Future of Cities* project developed several numerical scenarios of the future of the UK's 'system of cities' (see Foresight 2016a). At a time of UK city devolution and major city-oriented infrastructure investments, the Foresight project sought to explore the influence of one particular driver of change: future population growth in terms of alternative distributions across the UK's cities. Three scenarios in particular were found helpful in exploring their influence on e.g. future ways of living in cities, their economies, governance systems, etc.

Though initially developed to explore policy implications at the national level, collaborative work with individual cities quickly revealed the usefulness of these national scenarios to on-going long-term thinking work at city-level. These three national scenarios were often used 'off-the-shelf' to provide different national contexts within which local and regional futures could be imagined. For the benefit of the wider community of city-regional decision makers seeking to test the robustness of their assumptions and ideas for the future, these three scenarios are made available in this report.

## 2. The future of UK cities: three scenarios

Three national scenarios were developed as contrasting versions of the future of the UK's city system: 'Major cities empowerment', 'London-centric', and 'Smaller cities focus'.

Details of the methodology used initially to explore the feasibility of using alternative population distributions across the UK's cities to construct scenarios, and later to validate the relative feasibility of the imagined distributions by reference to job opportunities, are provided in a methodological report by Swain (2016). Although for consistency these scenarios were informed by mid-term population trends, the resulting themes offer an equally useful view of how UK cities might evolve in the longer term.

The 'Major cities empowerment' scenario imagines a future UK where major cities other than London, such as Birmingham, Bristol, Edinburgh, Glasgow, Leeds, Liverpool, Greater Manchester, Newcastle and Nottingham have experienced the highest relative population growth over the coming years.

The 'London-centric' scenario envisages a UK within which the significant majority of urban population growth occurs within the Greater South East city-region around London.

The 'Smaller cities focus' scenario imagines a UK system of cities where smaller cities such as Cambridge, Crawley, Huddersfield, Norwich, Oxford, Peterborough, Reading, Warrington and York collectively absorb the highest proportion of city-based population growth.

An illustrative representation of the varying relative distribution of future population growth across the UK's different cities under the three scenarios is provided in Figure 1 below. It should be noted that in order to simplify this representation, not all of the UK's cities are represented by the circles and lines on the diagrams.

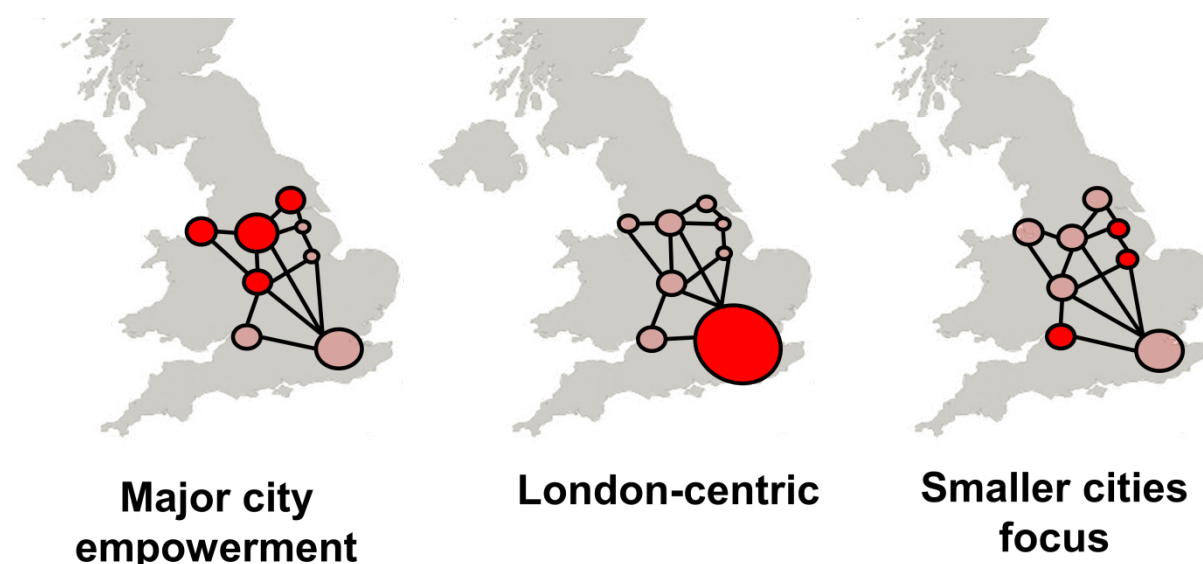


Figure 1: three illustrative scenarios for the future of the UK system of cities

### 3. Using the three scenarios

The three scenarios can be used by national and local decision-makers to explore ‘what-if’ questions about the future. These scenarios are not aspirational or prescriptive. Instead, they provide three contrasting reference points against which to sense check any assumptions made about the long-term future of an individual city, part of a city or a city region, as well as at the level of the national system of cities.

Throughout the course of the Foresight *Future of Cities* project, the three scenarios were used in particular to: 1) provide a point of departure from which to construct contrasting narratives about the future of a particular city, city-region or the UK; and 2) to identify opportunities and risks not immediately apparent within current ideas of the future. Appendix A and Appendix B provide two examples of how the three scenarios were used in practice. For each approach, a blank template is included as a resource for use by anyone looking to replicate or adapt the exercise.

- Appendix A uses the 3 national UK system of cities scenarios to explore long-term opportunities and implications for an individual city: Milton Keynes.
- Appendix B uses the 3 national UK system of cities scenarios to construct three alternative, compelling stories about an issue of interest: the long-term future of UK water policy and infrastructure development.

## References

Foresight (2016a). *Future of Cities : An overview of the evidence*. London: Government Office for Science.

Foresight (2016b). *Future of Cities: Foresight for Cities. A resource for policy-makers*. London: Government Office for Science.

Swain, C (2016). *The Derivation of Projection-based Scenarios for UK Cities*. London: ARUP.

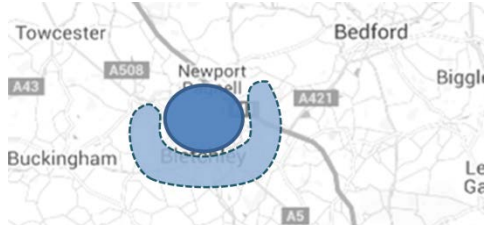
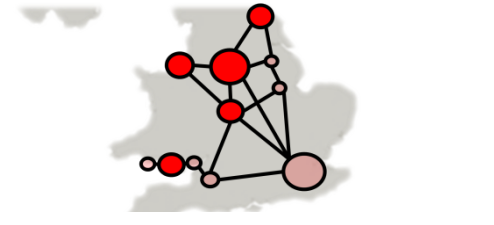

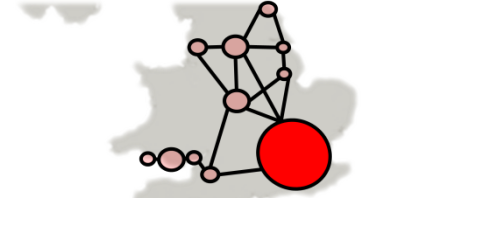
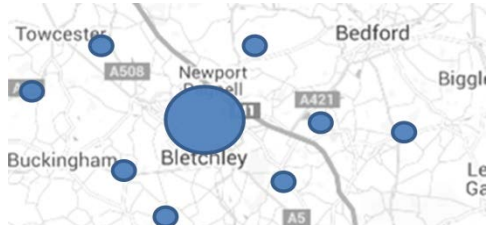
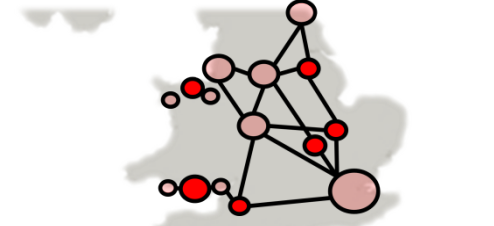
## Appendix A - Using the scenarios: postcards from the future

In order to assist decision makers in imagining themselves into a distant, unfamiliar and unknown future, whilst simultaneously also taking into consideration the multiple dimensions and aspects shaping a city's future, the Foresight project developed an approach in which participants send 'postcards' back from a future to the present. In these postcards, a snapshot of some of the changes that have taken place is described, as well as what hindsight would have highlighted as issues to have influenced differently.

A template for the postcards was developed and is available to be used as a resource on page 9. An example postcard as completed by participants during a Milton Keynes 'MK Future 2050' workshop in November 2015 is included on the following page. Postcards were typically printed A3 size for individual use, and A1 size for group use (in groups of 4-6). 30 minutes usually offered sufficient time for a group to have worked through the postcard to feed back. Adapting the postcard to support a visioning exercise requires completion of the blanks on the left-hand side of the postcard, including:

- Specifying a year at the top from which the postcard will be sent. The Foresight *Future of Cities* project often used the year 2050 as a reference point.
- Selecting the national UK system of cities scenario to be used as background for the postcard, by striking out the others from: "Greater South East / major cities (e.g. Birmingham, Manchester) / smaller cities (e.g. Crawley and York)".
- Providing a rough figure for population change. (This does not have to be accurate but is often helpful in providing participants with a relative feeling for how much change has occurred in the city across the decades.)
- Sketching an approximate spatial pattern for how the city has developed in order to link the city with change in its surrounding regions, and give something visual for participants to use. Typically sketches used on the Foresight project are summarised in the table below.


**Table 1. Illustrative spatial development patterns used for Foresight ‘postcards from the future’**

UK system of cities scenarios	City spatial development pattern (Milton Keynes workshop)	City-regional spatial development pattern (Welsh government workshop)
<p><b>Major cities empowerment</b></p>	<p>Concentrated fringe development to accommodate growth:</p> 	<p>Concentration of city growth along southern Welsh corridor</p> 
<p><b>London centric</b></p>	<p>High density development of city-centre around train station for commuters to London:</p> 	<p>Some growth in Cardiff but little in Swansea and Newport</p> 
<p><b>Smaller cities focus</b></p>	<p>Satellite town development to preserve historic Milton Keynes work-life offer of a city with access to the countryside:</p> 	<p>Growth in both northern and southern Welsh cities along coast corridors</p> 



## Postcard from the future - template

**Postcard from the future – year \_\_\_\_\_**



**Since 2016 population growth focused within Greater South East / major cities (e.g. Birmingham, Manchester) / smaller cities (e.g. Crawley and York)**  
**City's population has grown by \_\_\_\_\_ (\_\_\_\_% increase)**  
**The current distribution of population around the city/region looks like:**

The highest growth economic sector is

Employers see the city's strength arising from

How are people moving around the city?

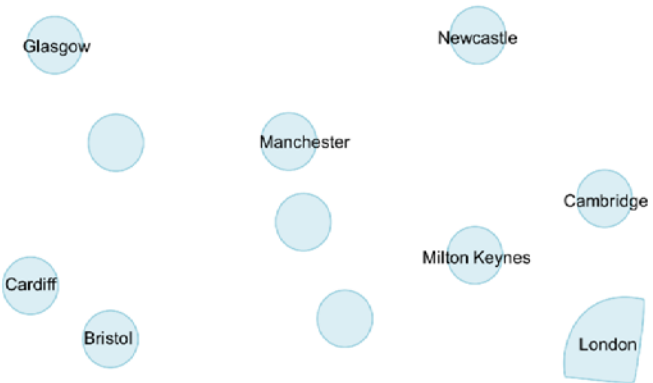
People think that life in their city is...

People wish that the following was different about their city:

If I had been responsible for the city's future in around 2016, I wish I would have known that:

- 1.
- 2.

**The city's role within the national system of cities and its relationships with surrounding cities are now characterised by**



## Postcard from the future - Milton Keynes 2050

### Postcard from the future – year *2050 in Milton Keynes*

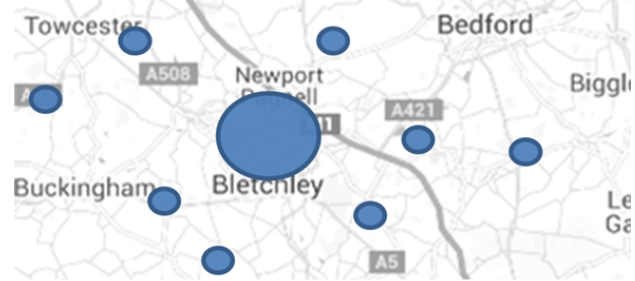


Since 2016 population growth focused within Greater South-East / major cities (e.g. Birmingham, Manchester) / smaller cities (e.g. Crawley and York)

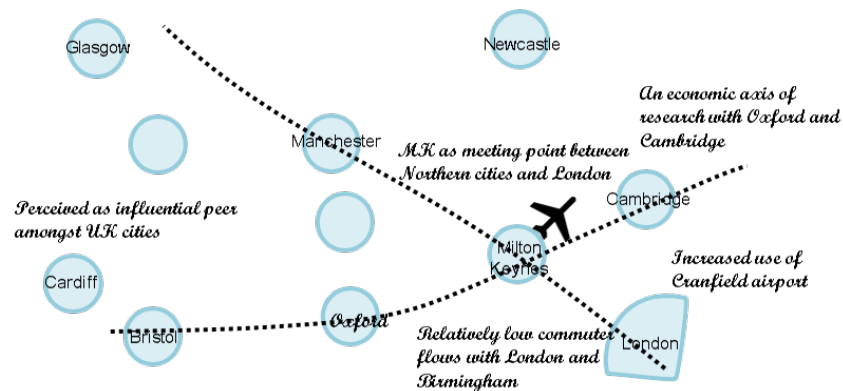
City's population has grown by 250,000 (100% increase)

The current distribution of population around the city/region looks like:

*Satellite towns development to preserve grid road structure in city centre*



The city's role within the national system of cities and its relationships with surrounding cities are now characterised by



The highest growth economic sector is

*Research. Specifically in tech and analytics sectors which developed from the existing University relationships in the region and Formula 1 capabilities.*

Employers see the city's strength arising from

*The flexible, cost effective and motivated workforce with high levels of technical skills. Many work flexibly on a number of R&D projects, working from home some days, and a few days a week travelling into collaborative working spaces in city centre.*

How are people moving around the city?

*Movement within satellite town is predominantly by foot/bicycle. Residents like to be active outdoors. Travel between the satellite towns and city centre is primarily by use of bicycle 'highways', or small autonomous vehicles*

People think that life in their city is...

*A unique quality of life offer, as most people have immediate access to the surrounding countryside and outdoors, but can work flexibly in an exciting job whilst having much time with families.*

People wish that the following was different about their city:

*That when early decisions were made to develop satellite towns, more emphasis was placed on very high quality housing, as the work-life offer of Milton Keynes is so special, but we didn't set the standard for the buildings themselves high enough in some cases.*

If I had been responsible for the city's future in around 2016, I wish I would have known that:

1. *More insight into the different finance options for developing small, high density development that offer access to green space for residents and high quality housing*
2. *The relationship between the existing Universities and surrounding London, Oxford and Cambridge Unis could have been developed earlier on.*

## Appendix B - Using the scenarios: multi-dimensional stories about the future

The three scenarios of future population distributions across the UK' cities were used as a context for constructing three contrasting 'what-if' stories about the future of an issue of particular interest: long-term water policy and infrastructure development (as part of the UK Water Partnership's annual showcase on the theme of 'Future of Cities' in June 2015. The aim of the exercise was to explore the significance of water as a strategic policy issue for the long-term development of the UK system of cities. In order to avoid overly-narrow considerations of water as an issue of relevance to the infrastructure sector alone, its influence on wider city future dimensions, such as future ways of living, urban economies, and urban form, were also systematically considered.

The worksheet used for this exercise is available from the following page and can be adapted for exploring other issues of interest, as well as construct contrasting narratives about the future. An example worksheet from the UK Water Partnership workshop is included following the blank template. In Foresight workshops, physical copies both in A3 and A4 sizes were used successfully. Adapting the template for a purpose requires:

1. Amending the guiding question at the top of the template to suit the purpose of the exercise. It should reflect:
  - the time horizon of interest (i.e. in the first blank defining a year of interest or period of interest. The Foresight project often found it useful to use a period of 'the next 50 years' or the year '2065');
  - the scale of focus (i.e. in the second blank, selecting a national focus with 'UK cities' or a specific city focus by naming it); and
  - the issue of interest (i.e. in the third blank, defining a thematic focus if relevant, such as 'the water sector').
2. Populating the worksheet cells with ideas. At the top of the worksheet table is a simple description of the three scenarios to be considered. The left-hand side of the table provides 'lenses' that break down the multiple dimensions that can be considered when thinking about the future of a city. Underneath each thematic 'lens' are types of trends or issues that could be considered. E.g. 'Living' in future cities involves reflecting on *who* would be living in cities, their *identities* and *habits*, their *experiences* and *well-being*, etc. Worksheets are typically completed on an individual basis. Worksheet cells do not have to be completed in a particular order, and not all cells have to be completed. It can be useful to focus on aspects that will be distinctive across the three scenarios. To reduce the time required or make the exercise easier to engage with, individuals can focus on exploring ideas for a single scenario. It can often also be helpful to consider the guiding question from the perspective of a particular city, rather than at the national level. (If not specified by the guiding question, a note of the city perspective used can be made below the table). 20 minutes is often enough time to produce sufficient content for discussion and consolidation.
3. Sharing definitive features that emerged as individuals completed their tables, and exploring how these might link together into different narratives about the future.

Outputs can be used to illustrate aspirations, options or identified risks. They provide content for producing engaging narratives, whether through rich, qualitative description, or visual illustration.

## Worksheet - template


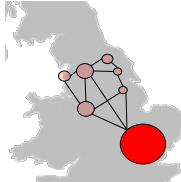
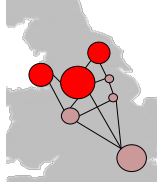
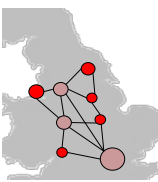
In \_\_\_\_\_, if UK cities developed with relative growth as in scenario 'X', what would be some of the **distinctive features** of the experiences, designs and development of **cities/city**: \_\_\_\_\_ driven by \_\_\_\_\_?

<p><b>LENSES</b> </p> <p><b>SCENARIOS</b></p>	<p> <b>London-centric</b></p> <ul style="list-style-type: none"> <li>• Extreme continuation of status quo</li> <li>• Majority of investment in infrastructure serving GSE</li> </ul>	<p> <b>Major cities growth</b></p> <ul style="list-style-type: none"> <li>• Accelerated growth of major non-GSE city-regions</li> <li>• E.g. Manchester, Leeds, Liverpool, Newcastle, etc.</li> </ul>	<p> <b>Smaller cities focus</b></p> <ul style="list-style-type: none"> <li>• Cities such as Chester, York, Norwich, Worcester, Preston, etc. experience large growth</li> </ul>
<p><b>Resources &amp; environment</b> Water availability, energy use, food production, waste management, ...</p>			
<p><b>Living</b> Habits, expectations, identity, well-being, social interaction, culture, ageing, ...</p>			
<p><b>Economies</b> Competitive industries, skills gaps, education, growth, international trade...</p>			
<p><b>Form</b> Density, housing types, street layout, regional patterns, zoning changes, ...</p>			
<p><b>Infrastructure</b> Transport networks, ICT impacts, autonomous technologies, decentralised ...</p>			
<p><b>Governance</b> Privatisation, accountability, civil unrest, regulatory innovation, democracy, rights etc</p>			

If you have chosen to predominantly focus on the future of a particular city, please name it here: \_\_\_\_\_

## Worksheet - UK Water Partnership

In 2065, if UK cities developed with relative growth as in scenario 'X', what would be some of the distinctive features of the experiences, designs and development of UK cities shaped and driven by the water sector ?

<b>LENSES</b>  <b>SCENARIOS</b>	 <b>London-centric</b> <ul style="list-style-type: none"> <li>• Extreme continuation of status quo</li> <li>• Majority of investment in infrastructure serving GSE</li> </ul>	 <b>Major cities growth</b> <ul style="list-style-type: none"> <li>• Accelerated growth of major non-GSE city-regions</li> <li>• E.g. Manchester, Leeds, Liverpool, Newcastle, etc</li> </ul>	 <b>Smaller cities focus</b> <ul style="list-style-type: none"> <li>• Cities such as Chester, York, Norwich, Worcester, Preston, etc experience large growth</li> </ul>
<b>Resources &amp; environment</b> Water availability, energy use, food production, waste management, ...	<i>Energy generation is purely wind and solar based because they do not require cooling.</i>	<i>Water for leisure is a concept familiar only to those who live on the coastline or more northern cities.</i>	<i>Communities manage water and energy provision as well as the majority of waste management at the local level. The perception is that the UK has coped well with global shortages of water and disruptions to food production.</i>
<b>Living</b> Habits, expectations, identity, well-being, social interaction, culture, ageing, ...	<i>Wash every day has become a luxury as it's too expensive for many families. Water out of the tap when turned it on and is coloured orange with a new decontaminating chemical, which people flavour with sugar-based additives</i>	<i>People receive real-time water availability notifications and weekly forecast to help them plan when to do laundry and put on the dishwasher.</i>	<i>Individual identities often include a strong sense of pride of their surrounding region and a sense of stewardship to safeguard it. Water does not feature as a distinctive aspect in many people's lives, but children think of it as children in the 00s did for climate change.</i>
<b>Economies</b> Competitive industries, skills gaps, education, growth, international trade...	<i>Drone delivery services for water have boomed, esp. in hotter periods which are increasing.</i>	<i>The UK has a worldwide reputation for expertise in water management and water tech clusters boomed last decade around our universities.</i>	<i>UK is a world industry leader in decentralised sensor and control technologies. Many people have at some point engaged in informal coding and design courses, and there are many shared facilities in communities for entrepreneurs to experiment with new technologies</i>
<b>Form</b> Density, housing types, street layout, regional patterns, zoning changes, ...	<i>Large underground reservoirs were constructed about 10 years ago to store water captured during wet periods for drought.</i>	<i>Several new major parks and green corridors have been developed across UK cities in recent decades to provide shading in summer and water retention during intense wet spells</i>	<i>Planning permission for all buildings and developments requires 100% rainfall capture and sale of surplus processed water to other city functions.</i>
<b>Infrastructure</b> Transport networks, ICT impacts, autonomous technologies, decentralise	<i>Major pipeline network spans across UK to supply GSE region. Regular pipe bursts, leaks, etc. in midlands regions which have seen underinvestment in recent decades to prioritise GSE water infrastructure investment</i>	<i>Smart sensors supply dry agricultural areas with water using a network of pipes buried alongside rail tracks during an era of inter-city rail network development</i>	<i>Inter-city commuting is done primarily by means of autonomous vehicles, as rail network investment about two decades ago was temporarily reinvested in boosting the water tech sector.</i>
<b>Governance</b> Privatisation, accountability, civil unrest, regulatory innovation, democracy, rights etc	<i>There are regular protests about the lack of available and affordable water. National government is considering re-nationalising water supply and treatment</i>	<i>Water 'guilds' have been established to coordinate water usage across city-regions.</i>	<i>Local elections include nominations for a 'water champion' who liaises with neighbouring town.</i>

If you have chosen to predominantly focus on the future of a particular city, please name it here: *not applicable*



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