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EFP Deliverable 5.16– WP 5 - National Policy Workshop Report

Screening Urban Foresights and Studies supporting Forward Looking Activities

What can we learn for a JPI-Urban Europe 2050+ Foresight?

Input and Results from the EFP Policy Workshop on “Screening Urban Foresight” (28.04.2011, Brussels) and from the Urban Europe Foresight Workshop on the Formulation of Foresight Themes (07.11.2011, Vienna)

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European Foresight Platform
The European Commission is providing the means to continue the important networking activities of foresight initiatives. Setting out on the previous work of the European Foresight Monitoring Network and For-Learn the new European Foresight Platform resumes its work.
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Introduction

How to implement Foresight is high on the agenda of Joint Programming Initiatives. JPI Urban Europe is one of the first JPIs that are set up as an initiative to establish the European Research Area. The JPI is in a preparatory stage to define foresight activities in the phase of setting up the initiative.

The Commission's Innovation Union Communication highlights the importance of partnering in research and innovation bringing together European and national level public players in Public-Public Partnerships (P2Ps).

The Partnering Communication (EC 2011) and the Voluntary Guidelines on FRAMEWORK CONDITIONS FOR JOINT PROGRAMMING IN RESEARCH 2010 (ERAC-GPC2011) highlight the role of foresight in order to build a shared strategic research agenda under the conditions the complexity of coordination efforts that have to take place in order to set up the European Research Area with respect to tackling Grand Challenges.

The JPI Urban Europe with the support of the European Foresight Platform has started a Pre-Foresight Phase in order to prepare for the first call on foresight is planned for spring of 2012.

The pre-foresight phase includes two workshops of which results are presented in this report.

Workshop 1: “Screening Urban Foresights and Studies supporting Forward Looking Activities” was organised by EFP in cooperation with JPI-UE and took place in April 2011.

Workshop 2: “Urban Europe Foresight Workshop on the Formulation of Foresight Themes” was organised by JPI-UE in cooperation with EFP as an initiative of the Nation States involved in the JPI-Urban Europe. It took place in November 2012.

The aim of the report is to give insight into the result of the workshops of this example of a pre-foresight phase in the development of a foresight in the early phase of setting up a JPI.

The report is split into two main parts. Part I relates to the first workshop on “Screening Urban Foresights and Studies supporting Forward Looking Activities”. Part II relates to the refinement of three foresight themes in the 2nd workshop that had emerged out of the EFP workshop and internal consultations with in JPI UE.

PART I

Screening Urban Foresights and Studies supporting Forward Looking Activities

1 Goals & desired results of the EFP Policy Workshop

The EFP European Policy Workshop aimed to provide support to the Joint Programming Initiative - Urban Europe (JPI-UE) in the preparation of forward looking activities.

“Urban Europe” (UE) addresses the grand challenges for urban development by **developing trans-national R&D programmes and research activities in Europe.**

In this context forward looking activities play a major role for providing substantial new insights into urban requirements and developments, developing urban scenarios and contributing to a long-term research agenda with a time horizon of 2050+. Within the frame of its Strategic Research Agenda, the JPI-Urban Europe strives therefore to take utmost advantage of existing results and identify needs for additional forward looking activities. This workshop will create the basis for **major foresight activities**, which will be conducted by the JPI-Urban Europe in 2011 and 2012 in order **to prepare its final strategic research agenda.**

The workshop was an important part of the pre-foresight phase for Urban Europe foresight activities, with the aim to

- **map and analyse existing foresight activities** to formulate foresight activities for UE upon a solid base of already obtained findings and perspectives
- **identify topics of strategic interest** for the JPI-Urban Europe that should be addressed in UE-Foresights
- **look for new conceptual perspectives** on urban regions and their development in order to find an adequate scope and to formulate the adequate objectives

1.1 The role of foresight for Urban Europe

Foresight activities are seen as a **highly relevant instrument** for Joint Programming Initiatives since they support the development and assessment of long-term scenarios and strategies. Therefore the JPI Urban Europe foresees foresight activities from the beginning and expects significant input for its long-term strategy and research agenda.

In the context of Urban Europe such foresight processes offers the possibility of **supporting the transition process of urban areas** by

- considering and integrating **technological, social, economic and ecological perspectives** and their respective stakeholder groups
- developing a **common understanding of all stakeholder groups on the needs and opportunities** for European cities in an international context and the related paradigm shifts regarding innovation and urban systems
- **elaborating perspectives and scenarios** to overcome the complex set of existing challenges, and
- providing substantial **input for long-term research agendas.**

Since several foresight activities have already been performed in the context of urban development and related topics, Urban Europe wants to take highest advantage of these results. However, as this

background paper shows, few of these foresights have a time horizon beyond 2030, leading to a need for additional, strategically focused foresight activities to be conducted in order to support the development of a long-term Urban Europe research agenda and roadmap.

In a first phase Urban Europe wants to **identify those strategic areas such targeted foresights could focus on**, select a limited number of topics (2-3), and start elaborating those. Moreover, a common conceptual frame needs to be devised which will allow comparing and integrating the results from different targeted foresights. This pre-phase is performed with support of the European Foresight Platform and DG Research. The process of this first phase is summarized in figure 1.

Figure 1: Overview of Urban Europe pre-foresight phase



According to the selected topics, foresights will be launched as soon as possible in the course of the UE pilot phase. The activities will be focused on long-term scenarios of urban areas and, as such, be geared towards investigating the demands and opportunities of urban areas and formulating key research questions accordingly.

1.2 Focus of the screening

As the **time horizon** for Urban Europe Foresights is envisaged to be **2050+**, the screening focuses in particular on foresights with a somehow comparable time horizon (i.e. 30 years and more). The long time horizon is justified as urban development and transformation processes are characterized by long-term planning and investment under fundamental uncertainty. Decision on present action, often lead to path dependencies and lock in situations, particularly when it comes to infrastructure investments, with long term consequences of economic, social or environmental nature.

The screening covers foresights that deal with **urban issues and selected non-region specific foresights** addressing topics that are relevant for long term urban development, such as: mobility, energy, climate change, water supply and management

1.3 Selected Foresights and studies supporting Forward Looking Activities.

Finally, after a first screening of foresights using the EFMN and EFP data sources, web-search helped to select **40 foresights and studies supporting Forward Looking Activities** on a long time horizon of more than 30 years (see Annex 3). The selection includes:

- nine national and local foresights with a particular focus on urban issues;
- nine global governmental, intergovernmental and interest group initiatives;
- five national and EU research projects,
- eight national foresight initiatives with no explicit urban focus but relevance for urban regions;
- two EU roadmaps
- six sector specific foresight on urban infrastructures;
- one EFMN Foresight brief on migration issues in 160 foresights

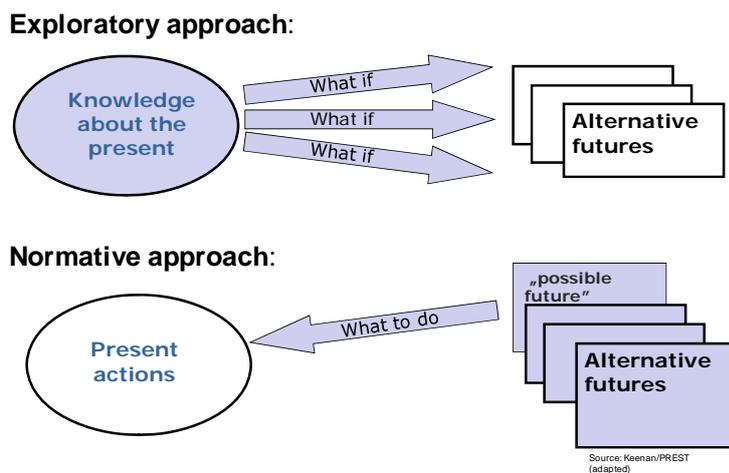
2 Brief introduction to Foresight

Foresight is a conceptual framework for a number of forward-looking approaches of informed decision-making that include long-term considerations. They focus on the increasing need of generating anticipatory strategies and future scenarios in the present for the present. Due to the complexity of decision making processes with multiple stakeholders involved, foresights puts particular emphasis on the participatory component of forward looking activities. It is often regarded as a policy-making process by which stakeholders are assumed to arrive at a deeper and shared understanding of dynamics influencing long-term development.

Although foresight activities have specific objectives – in the case of JPI-UE this is to establish a transparent structured support process for agenda setting – it is important to mention that there are several other, often overlapping or complementary, supportive functions of foresight that help to reach the main goal. Foresight can be applied to contribute to reaching consensus around shared visions, provoking a creative and motivating decision making, stimulating participation of stakeholders, paving the way for coordinated/coherent action, enabling mutual learning and strategic dialogue, and linking technology and innovation to wider socio-economic issues.

As the bandwidth of application of foresight can be broad and expectations on what it may be used for are often fuzzy, it helps to distinguish between **exploratory and normative nature of foresight**. Exploratory approaches lead to alternative futures asking “what if?”. Normative approaches, that can build on alternative possible futures ask “what to do?”. These two approaches can be combined in one foresight activity, when present action shall be derived from alternative but possible futures. But it also possible to build on other foresight activities, given the “alternative futures” emerging, are of relevance for the normative step in another foresight.

Figure 2: Basic elements of foresight

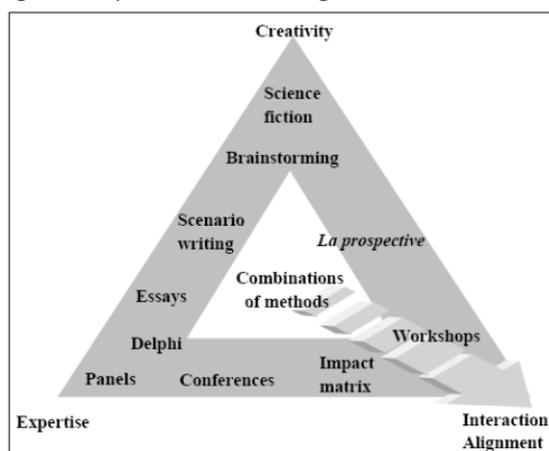


Another main characteristic of foresight is its **participatory nature**. If intended, a broad stakeholder participation in a foresight processes integrates views and perspectives of R&D actors, companies, public authorities, policy-makers and the public with the objective to explore future trends, identify important challenges in terms of threats and opportunities, develop desirable future development paths, and propose options for action.

Due to its emphasis on the **longer-term perspective**, foresight stresses the ability to proactively shape the future and considers alternative scenarios.

By employing a **range of qualitative and quantitative methods**, foresights can be adjusted flexibly to the actors needs. Foresights are set up using a wide spectrum of methods and combinations of methods from **expertise** based or **creativity** based and dependent of the degree and kind of **participation** envisaged (see figure 3). These methods can also be combined and range from desk research, modelling, Delphi to story lines, qualitative and quantitative scenarios and back casting, to name some of those that are frequently applied, which are combined as required.

Figure 3: Spectrum of Foresight methods



Source: D. Loveridge 1996

3 Mapping of Foresights

3.1 Sources, data potential and limitation

Sources for the mapping were on the one hand the systematic collection of foresight activities in databases and on the other hand publications and websites in the Internet.

A systematic collection of all wide range of foresight activities is available from the European Foresight Monitoring Network up to 2009 and since then from the European Foresight Platform.

Up to 2008 the screening of foresights in the EFMN database led to the collection of **over 2000 initiatives**. Information was collected by talking to experts and foresight practitioners, assisted by correspondents, looking at existing reports, browsing the Internet. Half of those were mapped for the EFMN mapping report, “Mapping Foresight in EFMN” (Popper 2009). The report uses a good set of mapping categories and classifications to provide an overview of foresight activities in Europe and worldwide.

The classifications used, include categorisations for time horizon, regional distribution, foresight objectives, outputs, sectors and several other categories with a focus on foresight methodologies.

These categories were used to pre-select foresight activities that envisage a similar time horizon and have a regional scope than Urban Europe foresight activities.

As figure 4 shows, 25% of all mapped foresights from Europe deal with the sub-national level. More than **400 sub-national foresights** were found with **more than 100 with relevance for urban regions** (see also figure 4). However, when it comes to identify those with a time horizon of 30+ only few matched this criterion. Given that in Europe only around 10% of all foresights have a time horizon of 30+ years (see figure 5), we can see that the number of urban foresight with a time horizon of 30+ years for city regions is rather limited.

Web search was conducted using the classifications developed for the Mapping report and combinations of keywords related to urban regions, 30+ time horizon and challenges that emerged in the pre-selection phase.

3.2 General Mapping of Foresight: EFMN mapping report 2009

Before going into details of the selected foresights, the EFMN mapping report 2009 allows us to give an overview on the scope of a wide range of foresight activities.

It has to be taken into account that in this dataset mapping results might show a bias due to respect to language problems, low or only short visibility of activities, and under-representation of foresight in some countries. Still, some general conclusion might be drawn that show the relative focus of foresight activities between Europe and other world regions. Figure 4 shows that national foresights are dominating in all world regions.

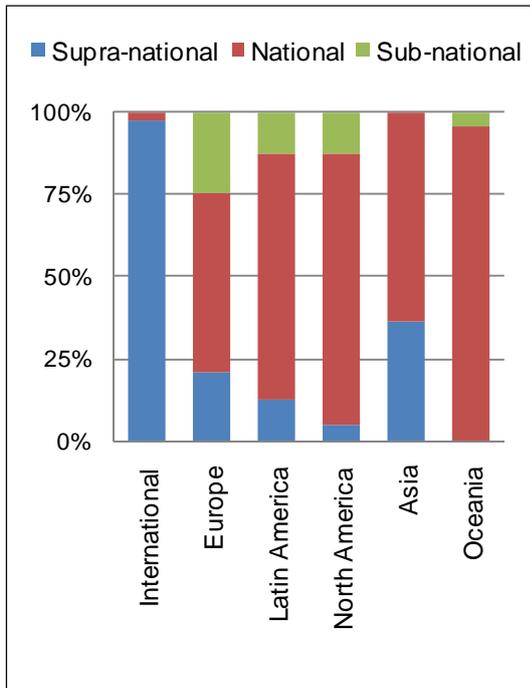
For obvious reasons, foresights conducted by international organisations focus issues with relevance to the supra-national level (see figure 4). These are of interest for planning UE-Foresight as they quite often address global issues and grand challenges, and as they more frequently deal with a 30+ time horizon than foresight activities on national or sub-national levels.

Foresight activities are likely to be set up with **multiple objectives** in mind.

Figure 6 shows an overview of objectives that are most frequently addressed by the mapped foresights. Supporting policy and strategy development – as a main goal to be achieved with UE Foresight activities – is an objective in two thirds of foresights, and priority setting for S&T shall be achieved by almost half the

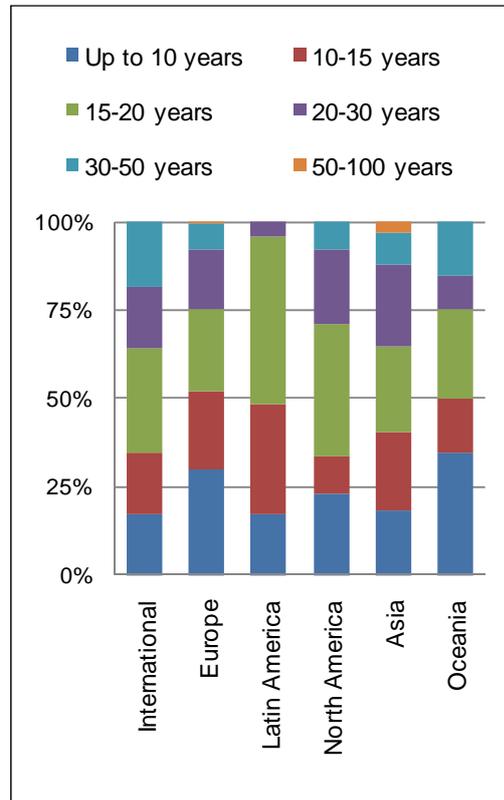
foresights. The participatory aspect of foresights is particularly addressed by more than 50% with the intention of network building. Future potentials of technologies are to be analysed in the vast majority of cases.

Figure 4: Territorial scale by region



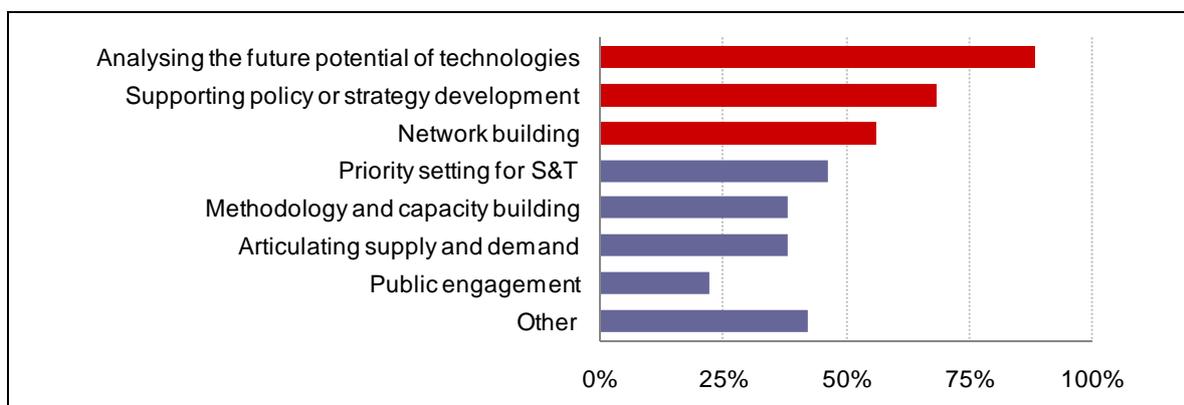
Source: EFMN mapping report (Popper 2009)

Figure 5: Time horizon by region



Source: EFMN mapping report (Popper 2009)

Figure 6: Foresight objectives (using Georgiou and Cassingena Harper 2008)



Source: EFMN mapping report (Popper 2009)

3.3 Purpose of Urban Region Foresights 30+

With respect to the system encompassed two different levels of Urban Region Foresights can be identified.

- 1) At the **local and sub-national level** Foresights deal with **city systems** of all sizes including megacities and metropolitan areas. In all cases broad participation of the population and local stakeholder groups are envisaged. They are either intended primarily for visioning and long term strategy or as instruments for strategic intelligence of **local decision makers** to collect information on local challenges and the related discourse in different stakeholder groups.
- 2) At a **meta level**, **urban issues** are dealt with as opportunities and threats that are related to identified challenges with relevance to **policy making at local, sub-national, national and even supra-national levels**. Meta-level Foresights intend to formulate questions for research programmes with a mission orientation or to generate knowledge required to deal with transition processes that are taking place in many **cities, city regions or networks of cities**.

Table 1 gives an overview of purposes of Foresight activities that were selected for the screening. They include Foresights with a local focus from cities and city regions in UK, Finland, Ireland, Canada, USA and meta-level Foresights and research projects in support of forward looking activities from France, UK and the European Commission.

Table 1: Purpose Urban Region Foresights

Local Focus on city systems:

- **Visioning and strategy development with broad participation**
 - Community visioning process (Imagine Calgary, CAN)
 - Strategy for limited land (plaNyC, US)
 - Sustainable development strategy (Leeds 2050, UK)
- **Strategic intelligence using broad participation**
 - Broad stakeholder involvement for informed decision making today (Imagine Dublin, IRL)
 - Knowledge about relevant changes (UTU35, FI)

Urban Issues for cities, city regions and networks of cities

- **Formulating a Research Programme with broad public and expert participation**
 - Vision on social issues for urban sectors and questions for a research programme (AGORA, FR)
- **Generating knowledge for long term transition**
 - Knowledge for transition (Regional Future, UK)
 - Urban metabolism approach to foster a more sustainable development path of urban areas (SUME, EU)
 - Develop possible and plausible scenarios ('shocks' - rapid and important changes in particular sectors or themes) (PLUREL, EU)
 - Flexible City as a jumping-off point to investigate the ways in which cities can be made more flexible to meet the challenges of the next fifty years. (Oxford Programme for the Future of Cities, UK)

3.4 Purpose of further 30+ foresights

Given the urbanisation of societies, not only urban specific foresights are relevant for a long term perspective on cities. Non-urban foresights with a thematic focus (European and non-European) chosen, do either have a **focus on specific sectors** such as energy, housing, mobility and other sectors with a strong importance of infrastructure, or they are particularly set up on grand challenges (climate change, energy scarcity, ageing, safety & security ...).

Table 2: Purpose of selected non-urban Foresights

Sectoral Focus

- **Generating knowledge about urban infrastructure in times of transition**
 - Examine the challenges and opportunities for the UK in bringing ‘intelligence’ to its infrastructure – the physical networks that deliver such services as transport, telecommunications, water and energy. (Intelligent Infrastructure Futures 2055, UK)
 - Explore how the UK built environment could evolve to help manage the transition over the next five decades to secure, sustainable, low carbon energy systems (Powering Our Lives, UK)
 - Develop three main scenarios for the UK housing stock for comparison. (The UK Housing Stock 2005 to 2050)
 - Find portfolios of technology for an Energy Transition in The Netherlands (Energy Transition - The next 50 years, NL)
- **Testing robustness of business strategy**
 - Help think about the future of energy and to test Shell's strategy against a range of possible developments over the long-term. (Shell energy scenarios to 2050)

Global Challenges

- **Strategic intelligence with expert involvement**
 - Global scenarios up to 2025 for the US-National Intelligence Council (Global Scenarios 2025, US)
- **Dealing with Climate Change adaptation**
 - Challenging and long-term (30 - 100 years) vision for the future of flood and coastal defence (Flood and Coastal Defence, UK)

4 Thematic Focus of Foresights 30+

4.1 Challenges for urban regions

Given the varying definitions of what is a “challenge” and on their relative importance, we want to list those grand challenges that are named in almost all foresight activities in developed countries and are considered to be of relevance for the development of cities and networks of cities in Europe (see Slide 1).

As the importance of challenges depend on the level of development of national economies, it is noteworthy to get an impression of challenges for fast growing cities in other world regions

Grand Challenges for European cities

- **Growing Cities per se:**
Europe has been facing relative to other world regions slow but steady growth of larger cities. Further growth is expected accompanied by declining populations in the rural areas. The main challenges however is how to compete with the fast growing global Mega-Cities in the BRIC countries.
- **Climate Change Mitigation:**
Climate Change mitigation efforts are seen as necessary and to be taking place particularly in urban regions as they are gaining more importance in the futures.
- **Calamities:**
Extreme events such as heat waves, flooding and other calamities related to climate change but also to other causes gain importance in planning urban development (e.g. infrastructure investments have to take into account local effects of average temperature raises of at least 2 degrees Celsius until 2050)
- **Resource scarcity:**
Energy resources as well as water resources or food can more easily become scarce in turbulent times we are facing.
- **Globalisation:**
Globalisation and the cumulative effects on urban development and global competition of cities become a matter of strategic importance.
- **Demographic Change:**
Ageing of population in Europe, Japan, China and other world regions will play a role in long term planning as well as effects of migration .
- **Safety & Security:**
Safety and security is addressed as part of global conflicts as well as of cultural conflicts within urban agglomerations.

4.2 Impact Factors and Key drivers

Trying to summarise the impact factors, trends and drivers that are discussed in screened Foresights, we can categorise them into 6 levels. Most factors were identified in an early phase of the foresight process as starting point for scenario development, given different challenges and goals. Other factors were explicitly identified together with participants as output of foresights, e.g. to formulate a research programme (see AGORA 2020). As this is still not a complete list, the EFP policy workshop helped to identify other impact factors that are not yet listed and ranked their importance for future Urban Europe Foresight activities. For the complete list elaborated at the EFP workshop see Annex 1.

Table 3: Impact factors, trends and drivers discussed in screened Foresights

- **Policy**
 - Climate policy – mitigation
 - Resource scarcity (energy, water)
 - Inter- and inner-urban connectivity (mobility, communication)
 - Safety & security
 - Maintenance costs of urban infrastructures
 - Competing cities and Attractiveness of cities
 - Multi level governance processes

- **Economic Development**

- Global division of labour
- China
- Knowledge base, Migration of knowledge workers
- New Business opportunities in Bio- and Nanotechnology
- New markets

- **People**

- Ageing
- Employment
- Changing life styles
- Precariousness, poverty, marginalisation
- Quality of life and commuting
- Cultural change
- End of affluence?
- Protection against threats

- **Environment**

- Climate change adaptation
- Landuse
- Urban metabolism – efficient use of resources & structural change of societal metabolism

- **Technology**

- ICT, Biotechnology and nanotechnology as general purpose technologies
- Intelligent Infrastructure
- Smart Grid, Energy-producing buildings, Heating & Cooling
- Smart Mobility, automated vehicles, non-mobile connectivity...

- **Financing**

- Long term infrastructure investment: financing and decision making
- Climate change adaptation
- Calamities and the Insurance Sector

5 Conceptual Considerations for Urban Europe

In this section we stand back and consider the implications of the examples above, for the Urban Europe and development of its Strategic Research Agendas.

5.1 Perspectives on long term foresights

Global level

- Global inter-governmental initiatives: covering United Nations, OECD, World Bank and other organizations. These are often pointed towards ‘outlooks’ or ‘policy agendas’ rather than research focuses. The global scale means that participation and capacity building may be through ‘toolkits’ rather than direct interaction.
- Global sectoral /technology initiatives: many of these focus on energy and emissions, which still remains at the centre of world scale modelling. The reasons are various: energy technology and economic effects are tractable for modelling: there is a global system: the trends, risks and targets can be defined. However many of these projects assume urban-related demand side variables, such as the rate of energy efficiency in buildings or transport, without any clear idea of the implications in real urban systems.
- Global interest group initiatives: there are various exploratory projects with long range thinking, such as the 192021 or the 2100
- Global research - led initiatives; these tend to be diverse and fluid: but the activities of networks such as Urbanization and Global Environmental Change should be linked to UE as far as possible.
- Global research / multi-media initiatives: there is a range of wider programmes activities, which are not always seen in the foresight category. For example, the ‘Shrinking Cities International Research Network’ combines academic research and doctoral programmes, with a creative media initiative with urban analysis of 4 key cities, past-future projections, a travelling exhibition / video installation, website with participation inputs, etc.

European level

- EU research projects / programmes: these represent possibly the world’s largest single source of foresight-related activity, and over the years the expectations from the Framework Programme have increased. A typical project specification now includes future studies and modelling: evidence gathering and systems analysis: policy applications and stakeholder engagement: and sometimes the use of multiple creative media. A few examples are quoted here (SUME, PLUREL, etc), but there are many more. There are various attempts to follow through, e.g. activity related to the FP4 Cities of Tomorrow theme aimed to improve the links between research and policy applications: but this is not easily achieved.
- EU Policy Roadmaps: these are focused on a particular technique used in foresight, i.e. the strategic planning / roadmapping to achieve defined policy goals, in the face of uncertainty and use of scarce resources. These may be linked to other future studies, research papers, technology assessment, participation processes (although such linkages are often unclear from the presentation of the roadmaps). There is scope for better connections between the research and policy applications.
- EU agency / sectoral thematic evidence programmes: for instance the EEA ‘Prelude’ landuse scenario modelling: or the ESPON Scenarios 2030 programme. Although not really basic ‘research’, the benefit of these projects can be in better linkage to the policy development process..

- EU civil society programmes: a wide range of initiatives from organizations such as the European Technology Platforms, European Climate Foundation etc.

National & territorial level

- National foresight examples: these are possibly more manageable than at the EU level: in that the stakeholder community is more easily accessed, the policy applications may be more direct, and the research community better integrated. Some of the best examples are from the UK Foresight programme: however there are often large gaps between the research materials, the synthesis, and the policy applications. For instance the 'Landuse Futures' project was seen as interesting but still searching for a clear focus of application in either research or policy terms.
- National research programmes: various countries are approaching the challenge of urban research, and 'urban sustainability research'. Although there are national differences, there appear to be common issues which remain out of reach. For instance the UK 'Sustainable Urban Environment' multi-year programme delivers valuable research results but finds it difficult to connect with policy / industry applications.
- National / territorial level examples: in a few cases a national programme focuses on the territorial agenda, i.e. spatial development, infrastructure, landuse change, and spatial policy implications. America 2050 is possibly the furthest advanced of any, outside China.
- Local / city examples: there are many examples of foresight thinking to a 20 year horizons, i.e. an effective horizon for policy applications. Beyond this there is a role for exploratory and creative visioning, but the linkage to policy tends to reduce. At this scale the links to research tend towards the consultancy / advocacy end of the scale: although some research effort looks directly at this interface and the tools / techniques which can improve it.

Framework for review

The more detailed review of examples (see Annex 3), refers back to the commonly accepted Foresight framework: here defined in 3 dimensions

- Futures dimensions (scenario / horizon scanning / prospectives etc.)
- Stakeholder dimensions (networking, capacity building, training, mobilization)
- Strategic dimensions (policy development, planning, investment, evaluation etc)

Each of the foresight types above, has a different focus and approach within the foresight framework: as in the table below:

Table 3: Summary analysis of urban foresight types

	Futures dimension	Stakeholder dimension	Policy dimension
Global inter-governmental	Exploratory focus	Mediated at the global level	Strong linkage to sponsor agencies
Global sectoral / technology projects	Technical & modelling focus	Sector / technology community	Input to policy process
Global interest group	Exploratory & visioning focus	Broader community	Linkage to NGO agendas
Global research network	Broad research focus	Research user community	To be identified

Global media / communications	Visioning approach	Creative / communications focus	Aspirational focus
EU research projects	Various: methodology development: technical & modelling	To be identified	EU / MS policy focus
EU Policy Roadmaps	Normative policy goal focus	EU civil society	EU / MS policy focus
EU agency / sectoral thematic	Technical & modelling focus	'story & simulation' approach	Agency policy focus
EU civil society programmes	Various	Active members / stakeholder links	Policy lobby focus
National foresight examples	Various: methodology development: technical & modelling	National stakeholders	Policy innovation approach
National research programmes:	Various: methodology development: technical & modelling	National stakeholders	Policy innovation approach
National / territorial level	normative / technical	National stakeholders	Policy lobby focus
Local / city examples	Normative / technical	Local stakeholders	Policy lobby focus

5.2 Key Issues in long term urban foresight

Innovation at the horizons

Looking at the above examples, it is clear that the 'ideal model' of fully fledged urban foresight, focused directly on urban issues, with a long term horizon, including stakeholder engagement and public participation, and informing strategic planning and policy development, is quite rare. Some examples which attempted this, e.g. the Georgia Basin Futures Project in Canada, saw different views and tensions between sponsors, researchers and participants. Yet the needs and the benefits should be clear, in bringing together these different strands.

So why is a fully fledged urban foresight (a) quite rare (b) often challenging? There are questions to explore, here focused on the concept of 'horizons':

Time horizons

For longer term 30+ year studies – the rate of change (qualitative / structural or paradigm change) – is generally greater than the degree of system stability / coherence. Therefore in technical terms, we can't build an effective model of the system: we can't trust the existing models that far: we don't trust the conceptual frameworks behind the models, beyond 30+, and often much less. However, decisions are made on infrastructure & spatial patterns which are likely to have very long term effects of 100+ years.

Who might use a 30+ study, and why? those looking at wider definitions of 'value' , investment etc: .most infrastructure will be around for 30-100 years (extending from past trends), but will be fully financed within 20-30 years: therefore the 30-100 period is more concerned with 'social value', in the more

qualitative area of vision, aspiration, agenda setting etc.

Spatial horizons

Conventional definitions of 'the city' have less relevance to the reality. Many concepts of the 'urban' are shifting towards the 'global urban system' or 'regional' / 'territorial' ... (and in many cases includes what was 'rural'). It could be argued that the focus on the conventional 'city' (assuming this as a clear specific thing), is actually misleading, if it distracts attention from other levels of spatial activity: the peri-urban, metro-scape, tax haven, aerropolis and so on.

Why is the 'urban' less modelled & analysed than other systems e.g. 'energy' ? It seems that energy / emissions has a core of technical systems relationships which are tractable for modelling (based on physics / engineering): so when an energy study looks at socio-cultural-political issues which are more fuzzy and controversial, it still has a solid foundation in energy physics. Similar for transport, construction and other infrastructure. But much of the urban agenda is less focused on physical systems (landuse, buildings etc) and actually more about relationships (work-home, community / household etc). For such relational systems, a quantitative modelling approach can be worse than useless.

Policy horizons

Urban systems are subsets of national / global systems: often picking up problems which are caused at other levels. So there are issues of agency, displacement, split incentives etc. A UE research approach needs to aim at not only 'urban' policy-makers, but national / EU policymakers with influence on urban problems. But this raises many political and ethical questions. For instance, the current neo-liberal response to the credit crunch / national financial deficit, creates problems of poverty, unemployment, homelessness, ethnic conflict etc, which are magnified in cities. But urban policy-makers have their own financial pressures and few resources to respond to these problems. Many of the local foresight examples put the problem of 'poverty' in a box alongside 'transport' or others, and then focus only on boxes with some local influence.

Worldview horizons

In contrast to the dominant 'techno-rational' worldview, many factors of change are now seen as more qualitative, subjective, contingent, inter-personal etc: where city success or failure is determined by a social-cultural level of perception, creative action etc.. So the conventional techno-rational research approach is probably not enough to respond to these. But much research still focuses on the technical / functional level, as that fits better with the techno-rational paradigm of theory / data / model / results, and the research skills and tools to do that. Other more open and fuzzy forms of research are more challenging to manage and programme.

This also links to 'urban concept horizons': and the diverse concepts of 'the city' – (global network / local perceptions / personal imaginary, etc). Again this looks beyond the scope of rational policy / technology, towards more controversial regions: these can be accessed by socio / cultural / political / aesthetic approaches.

Horizons in conflict & dissonance

Finally the role of critical perspectives, conflict and dissonance: clearly, many cities are arenas for social movements, protest, and systemic conflict. The dominant regime of neo-liberal, globalized, finance driven, western cultural model, centre-right shrinking of the state, creates many 'losers' alongside 'winners'. But the techno-rational research model often pushes this to the side. For instance the UK Landuse Futures foresight project (above), had a wide-ranging scientific and policy review, but forgot to mention the fact that 80% of the land is owned by 3% of the population. As cities are increasingly polarized, between wealth / poverty, or migrants / natives, there is a need for research models and participation processes which can bring conflict and dissonance into the centre.

5.3 Implications for Urban Europe

These are initial ideas coming from the above analysis, to be tested at the workshop.

A typology of urban foresight research

These are some basic types, which emerge from the case study examples above, to be further explored in the SRA development process:

- Foresight-oriented research 'about cities': programmes and projects to explore thematic areas, such as the topics in each of the 'city images':
- Foresight-oriented research 'for cities' – more directly connected to the policy agendas and policy processes in particular cities:
- Foresight-oriented tools and techniques to enable foresight oriented research as above: e.g. information systems, model interfaces, participation tools etc:
- Foresight programmes 'about research for / about cities': a focus more on meta-research, meta knowledge systems, and research programming.

Each of these types is relevant to the SRA, and there will be benefits in running them in parallel.

Innovation in research uses & users

One of the aims of 'fully fledged foresight' is to create active links between futures-oriented research, and its applications. This raises some interesting questions:

For 'policy applications' – there is a need to look beyond the conventional model which divides between research 'providers' and 'users'. This would look towards more active models and systems of knowledge co-production. The note above on critical perspectives and urban conflict, suggests this strongly: for instance the involvement of different groups as far as possible in the programming and dissemination of research. So a forward looking response would aim to engage with a much broader community, e.g. industry, finance, infrastructure, foundations, interest groups, education, entertainment, media, arts / culture groups, etc.

For 'policy approaches' – there is a need to look beyond the normal model of state and public sector 'government', towards more distributed / networked 'governance'. Even the more wide-thinking post-normal science researchers, often assume that the job is done when they deliver 'the results' to 'the policy-makers'. However the current public sector deficit and austerity programmes is forcing the issue:

in many countries, strategic planning is postponed, in-house research units are cut, and ‘policy-makers’ are fighting fires: the urban system which should be building its collective intelligence, appears to be going backwards. This also suggests an alternative concept model for how cities work: not so much a ‘public sector government’ model of planners and managers at the centre: more of a complex, chaotic, self-organizing ‘relational’ model, where many stakeholders compete and collaborate.

For ‘policy responses’, the above suggests framing of research as part of the chain of ‘knowledge co-production’, which links the SRA and researchers with other parts of the system. Some options include:

- Policy integration & innovation, within state / public sector
- Networked policy & governance as a co-production community of stakeholders
- Innovation in networked policy & governance, through Web 2.0 / ESS / etc.

Innovation in urban research concepts

The above highlights a range of innovations in city concepts: in turn these can inform & stimulate innovation in the foresight-oriented research approaches, as above.

- Territorial city concepts: this is the conventional ‘bread-and-butter’ arena of much urban research, as set out in the Scoping Report. Assuming cities as territorial-based systems, various modelling approaches become viable, such as transport-landuse, spatial economic interaction, cellular automata or micro-simulation.
- Network city concepts: however, if the basic assumptions can be expanded to include a multi-level, multi-lateral network concept, driven by local / global and technical-human interactions. Then the research arena also becomes more challenging, and with less consensus on the appropriate tools and techniques.
- System dynamics concepts: the rise of complexity / transition / emergence theory, with many applications in agent based modelling, technology assessment, or innovation policy. Looking at cities as ‘complex adaptive systems’, or ‘cognitive complex adaptive-learning systems’, is more than a theoretical idea to be tested: it changes the way in which research can be framed and implemented. Again this is a step change in the ‘realism’ factor, but also in the challenge to traditional research models, which don’t necessarily work in situations of high complexity and indeterminacy.
- Inter-subjective urban concepts: looking at cities / territorial entities more as cognitive systems: (learning / creative / socio-cultural etc): then other research approaches come to the fore. In particular these might aim to bridge the conventional divide between knowledge production and application. For instance some new social-technology / new-media projects are beginning to provide the tools for knowledge co-production (i.e. continuous interactions between urban monitoring, analysis and policy responses). They also highlight the role of different forms of intelligence – not only technical, but emotional, entrepreneurial, cultural, ethical and so on.

Innovation in research modes

Finally, how to bring together this diverse range of possibilities? Above, we have a typology of research modes: a typology of policy applications and knowledge systems: and of concepts in urban system and urban research. All this suggests the possibility of some parallel research modes for the SRA:

- ‘normal’ research modes – i.e. with relatively clearly defined problems, accepted theory and methodology, working models and datasets, falsifiable hypotheses, and high probability of delivering robust and reproducible results.
- ‘post-normal’ research modes – more concerned with fuzzy inter-connected problems: high levels of uncertainty and conflict in values and stakeholding: multiple theories and methodologies: research

process and products are linked to parallel debate by stakeholders on a DIPSI model ('deliberative, inclusive, participative, social intelligence').

- 'co-evolutionary' research approaches: this aims to respond creatively to fuzzy inter-connected 'agendas' (problems / opportunities / conflicts / responses): co-production methodologies (stakeholder learning & policy innovation): research processes and results are seen as multi-level learning pathways. There is an overall direction, which can be framed as the process of evolving collective intelligence, and the knowledge systems to support it. Again these involve multiple concepts of intelligence – not only technical, but emotional, entrepreneurial, cultural, ethical and so on.

6 Conclusions and Lessons Learned

6.1 Concluding summary

JPI-Urban Europe

The Joint Programming Initiative – Urban Europe plans to launch foresight activities with a time horizon of 2050+ in order to support the mid-term consolidation of its Strategic Research Agenda. In the present pre-foresight phase, a screening of foresights and forward looking activities on urban issues has been conducted that should provide an overview of challenges, trends and drivers with a time horizon longer than 30 years, and underpin the specification of areas where a deepening of forward-looking knowledge would be needed.

Screened foresights with three different perspectives on urban issues:

Local – higher-level – sectoral foresights

More than 100 foresights with a time horizon of more than 30 years were identified that are dealing with urban issues. 40 activities with three different perspectives on urban issues were screened: (a) city foresights commissioned mainly by local authorities focussing on a specific urban region (e.g. New York, Amsterdam, Uusimaa-Helsinki, Leeds, ...) (b) higher-level foresights commissioned by national or supra-national actors that do not focus on a particular urban region (e.g. France, Asia Pacific megacities, ...) and (c) sectoral foresights with a focus on urban challenges (e.g. energy, mobility, housing ...).

Screening Results on Urban related Foresights and Studies

Common to all screened foresights is the recognition of the trend towards increasingly urbanized societies worldwide. Many foresights refer to the global trend of concentration of populations and fast growing megacities. Although in Europe over the last decades this trend has been far more moderate or even reversed when looking at administratively defined cities,

urbanization is a trend in terms of economic activities, innovation, life styles, culture and demography in more widely defined city regions.

Turbulent times ahead

Common to the foresights screened is that there is little doubt that turbulent times with many uncertainties and big challenges are lying ahead over the next decades. Even very optimistic scenarios stress the urgency for action with respect to grand challenges and changing framework conditions. Big efforts will have to be made in ways as transitions will take place effecting urban regions in several regards.

From wild cards to “business as usual”

In contrast to older foresights from around the turn of the millennium, they expect challenges, threats as well as required innovations to have a much higher impact and speed. Factors that were seen as stable some years ago are now dominating the debates about drivers shaping urban society, and factors that were not even seriously considered in the analysis of wild cards are now on the agenda and cannot be ignored any more. They have to be considered in any business as usual scenario. To give an example, energy prices at present level were at the most considered in worst case scenarios. The Peak-oil debate, which was long time played down as esoteric, only made it to the public debate recently when other arguments failed to fully explain the fast rising oil price.

Acceleration and magnitude of change processes become a second order challenge.

Acceleration and magnitude of change processes become a new category of challenges. They are higher order challenges for policy making for urban regions, urban management, economic activities and the population living in these regions, asking to seriously question existing paradigms in all of these domains.

Related questions to prepare such paradigm changes and transitions amongst others are:

- How to deal with threats that cannot be mastered as calculable risk for infrastructure investments?
- How to deal with real uncertainty and impossibilities to insure long term investments?
- How to deal with speed of change, inertia of decision making and the lock-ins delaying adaptation efforts?

Good practice foresight: AGORA 2020

In search of foresights with a particular focus on defining a strategic research agenda as in JPI-Urban Europe, only one activity could be identified that had a comparable time horizon and a similar aim. The French AGORA 2020, conducted some five years ago, aimed at formulating research questions for a French research program addressing urban issues. JPI-Urban Europe could therefore fill an apparent gap by setting up a cross national foresight activity, taking AGORA 2020 as a good practice example to learn from.

Some other long term examples could be mentioned - America 2050, Canadian Integrated Community Sustainability Plans, UK Foresights on Land Use & Energy, etc

Networks of Cities – a missing perspective Although the meta-level foresights screened intend to draw conclusions for cities more generally, a systemic perspective on cities as parts of an interacting network is missing in all of the screened foresight activities. As shown by complexity research, a hierarchical ordering and differentiation of cities in a network of cities can be observed (Pumain 2006, Zipf 1949), i.e. the distribution of cities is not random, and size and functionalities of individual cities are determined by some kind of linkages. Main factors explaining the diversity of urban regions in respect to size are accessibility within the network and the capacity to innovate and adapt innovations.

Also, the definition of ‘what is a city’ is shifting, with the rise of peri-urban fringe areas, airport cities, agglomerations, mega-cities and other new concepts.

Main results from the workshop: Topics with high importance and uncertainty

Grand Challenges for urban regions Most of the screened foresights deal with the following Grand Challenges: Growing cities, Climate Change Adaptation and Mitigation, Calamities (heat waves, flooding...), Resource availability (energy, water, food), Globalisation, Demographic Change, Migration, Safety & Security. This is not surprising but it confirms the universality of these Grand Challenges for urban regions in Europe and worldwide. However concrete opportunities and threats might differ significantly.

China and other growing economies The growing global importance of China (but also of other countries) is seen as a factor associated with large uncertainties for Europe. Opportunities and threats for European urban regions are matters of long term strategic interest. Some of the most challenging urban questions are seen in cities on the edge of the European space, such as Istanbul, St Petersburg or Tel-Aviv.

Global competitiveness of European networks of cities Given global competition and the emergence of networks of mega-cities globally and regionally (e.g. China) questions arise about the interaction between these cities and between megacities and the clusters of cities connected to the mega cities, and the consequences for the European Network of Cities.

Climate Change adaptation as cross cutting issue There is no doubt that the adaptation to climate change will be a Grand Challenge for European cities, as the already unavoidable rise of global average temperature by two degrees Celsius or more will not only affect European cities in the form of heat waves, but also through extreme weather events, flooding or even food shortage. Given this wide range of threats involved, adaptation to climate change is a cross cutting issue touching several policy fields at urban, national and European level.

Policies and investment in the light of the The financial crisis in 2008 is a topic with high impact on the strategic behaviour of a wide range of actors. The consequences have not been addressed in the screened foresights. Nevertheless it is becoming a limiting

consequences of the 2008 financial crisis framework condition in the medium and long run. As an example, the financial crisis and the consequences for public and private investments will affect financing large scale “greening” of infrastructure or housing plans. Given the limits in public budgets combined with high uncertainties regarding climate change, energy availability and prices, or other factors, investment might be postponed or the investments could be reduced to limit financial risk. The long term consequences are not yet understood and adaptive strategies are needed. Already in some EU countries there are social tensions and conflicts taking place on city streets, and these are seen as likely to grow.

Action points and foresight proposals

Multi-level, multi actor governance processes and participation in policy development Multi-level governance processes are seen as highly uncertain and the role of different actor groups in decision making processes are seen as large obstacles for strategic policy making. This raises many questions to policy makers but no clear answers are at hand. City foresight that are of exploratory nature addressing the creativity and inspiration of participants with the aim to form shared visions are soft instruments in a democratic decision making processes with complex governance structures.

Taking advantage of opportunities for transition management It is widely acknowledged that large transitions are to be expected in the next decades. New opportunities influencing their development as economic centres and the wellbeing of urban population?

As it becomes harder to assess and calculate the risk related to calamities through climate change and other factors, new approaches to managing emerging uncertainties need to be developed, in addition to advancing classical risk management and disaster control for urban regions. With high uncertainties involved, opportunities will arise from that and can be understood as inspiration for entrepreneurial activities with the goal of economic profit from innovation. These are likely to be incremental innovations. However, given the observation of turbulent times ahead, it might be questioned if incremental innovation can lead to the necessary transitions (e.g. in energy, mobility ...) or if radical innovation (like intended in the case of Urban Europe’s SRA) and socio-economic paradigm changes are to be aimed at. Although profits might be unlikely and short term rational economic behaviour minimising risk will hinder radical innovation, benefits might occur as positive externalities.

Dealing with threats – Management of uncertainties

Taking advantage of opportunities for managing/triggering transitions As it becomes harder to assess and calculate the risk related to calamities through climate change and other factors, managing new uncertainties in addition to classical risk management and disaster control for urban regions has to be developed. With high uncertainties involved the role of the insurance sector might change for urban development strategies, e.g. when investing in or maintaining urban infrastructures.

Paying particular attention to the adaptability of urban regions

After several decades of stable framework conditions for the development of urban regions in Europe, acceleration and magnitude of change become a challenge of second order. The capacity to adapt will be a matter of competitive advantage and resilience of urban regions which is cross cutting.

6.2 Lessons Learned for the Urban Europe 30+ Foresight Exercise

6.3 Workshop Agenda and Approach

Workshop Agenda

Meeting	2 nd European Foresight Platform Policy Workshop
Date	April 28, 2011
Location	Neth-ER, Aarlenstraat 22, 1050 BRUSSEL
Start/Close	10:00 – 16:30

‘Screening of Urban Foresight activities with a time horizon of 30+ years – What can we learn for a Joint Programme Initiative Urban Europe 2050+ Foresight?’

The EFP European Policy Workshop aims to provide support to the Joint Programming Initiative – Urban Europe (JPI-UE) in the preparation of forward looking activities.

“Urban Europe” addresses the grand challenges for urban development by developing trans-national R&D programmes in Europe.

In that context forward looking activities play a major role for providing substantial new insights into urban requirements and developments, developing urban scenarios and contributing to a long-term research agenda. Urban Europe therefore will start with foresight activities already in its pilot phase with a focus on a long-term time horizon of 2050+.

10:00 hrs	<p>Welcome, introduction of participants (<i>Susanne Giesecke, EFP coordinator, Austrian Institute of Technology</i>)</p> <p>Introduction to the EU Forward Looking Activities and the EIP (<i>Domenico Rossetti, European Commission, DG Research and Innovation</i>)</p> <p>Introduction to JPI Urban Europe: Goals, visions, central questions and desired outcome of the workshop (<i>Margit Noll, Vice Executive Director, Joint Programme Initiative Urban Europe</i>)</p>
10:30 hrs	<p>Chair: <i>Matthias Weber (Head of Unit Research, Technology and Innovation Policy, Austrian Institute of Technology)</i></p> <p>Presentations of screening results from Forward Looking Activities with a time horizon of 30+</p> <ul style="list-style-type: none"> • Scoping issues: research questions, time horizons, kinds of innovations, defining cities (<i>Joe Ravets, MIOIR</i>) • Analysis of Concepts, Challenges, Trends, Drivers: What is missing? (<i>Klaus Kubeczko, AIT</i>) •
11:00 hrs	<p>Discussion of results</p> <ul style="list-style-type: none"> • Creative brainstorming: missing perspectives for Urban Europe Foresights

	<p>(Completing Impact factors, Trends, Drivers, Challenges) (2 Groups – A: Economy Finance and Technology; B: Policy, People and Environment & Social Ecology,)</p> <p>Questions for the groups</p> <ul style="list-style-type: none"> ○ Given the list of impact factors derived from the screening exercise, what kinds of unexplored trends/trendbreaks and drivers of change in cities can you imagine to become effective at the time horizon 2030/2050? ○ What challenge does it raise for cities and for networks of cities? What’s the threat involved and waht is the opportunity?? <ul style="list-style-type: none"> ● Plenary : Report on additionally identified new impact factors trends, drivers. Bring Flip Charts together. ● Plenary: Assessments of <ol style="list-style-type: none"> 1) importance for cities and/or networks of cities (vote for which level it is important with 4 points p.p.), 2) Threats and opportunities which requires much attention (vote with 4 points) and 3) relevant time horizons (2030, 2050+) <p>Result: Flipchart with post-its on new and existing trends/drivers and associated challenges, flipchart distinguishes importance for city level and uncertainty. Two flipcharts for 2030-2050 and beyond 2050</p>
12:15 hrs	Lunch
13:15 hrs	<p>Session on the thematic focus: confronting Urban Europe city images with identified long term issues and clarification of expected type of outcome of Urban Europe 2050+?</p> <p>Envisaged are working groups on city systems (e.g. “Adaptive Cities”) and on systems of cities (Network of European Cities, Megalopolis, City Clusters) (2 working groups), Moderation: Klaus Kubeczko (Austrian Institute of Technology)</p> <ul style="list-style-type: none"> - How could the identified trends/drivers and challenges be clustered into broad themes for Urban Europe 2050+ foresight themes? What “major issues” could be proposed (from the perspective of adaptive cities and systems of cities respectively, or from other meta-images arising from the previous discussion) as candidate topics for foresight - Do they meet the criteria of 1) high potential impact/raising big challenges and 2) high degree of uncertainty? And 3) relevance from a national/cross-national perspective (in Europe)? - Result: A limited number of broad candidate themes (4-6) for further deepening
14:00 hrs	<p>Session on the scope of foresight (2 working groups), Moderation: Joe Ravets (MIOIR)</p> <ul style="list-style-type: none"> - What are important sub-themes to be addressed, covering a more fine-grained specification of problems as well as potential inroads for tackling them?
14:45 hrs	<ul style="list-style-type: none"> - Time horizon? - Geographic focus? - Result: better specification of the broad themes in the working groups,

	<p>captured on flipcharts for each theme with sub-aspects</p> <p>Plenary to summarise and cluster and prioritize results</p>
15:00 hrs	<p>Session on candidate topics for Urban Europe 2050+ <i>(2 working groups), Moderation: Annelieke van der Giessen (TNO)</i></p> <ul style="list-style-type: none"> - <i>Further specification of the potential themes</i> <p><i>Result: Text- or table-based explanation:</i></p> <p><i>What is the main issue to be addressed?</i></p> <p><i>Time horizon, geographic scope?</i></p> <p><i>Why do we need a foresight on this topic? Why could it deliver significant results?</i></p> <p><i>Does it have the potential to raise future research issues? Examples?</i></p>
16:00 hrs	Wrap up & conclusions, feedback
16:30 hrs	End

PART II
Urban Europe Foresight Workshop
on the Formulation of Foresight Themes

1. Foresight Topics

Since the results of a variety of foresight activities in the context of urban development and related topics are already available, strategic selection of relevant topics for foresight activities is needed, which on the one hand take highest advantage of already existing foresight results and on the other hand contribute to a better understanding of long-term urban requirements, developments and scenarios. This is of special importance since only few of these existing foresights have a time horizon beyond 2030, thus calling for additional, strategically focused foresight activities to support the development of a long-term research agenda and roadmap. It was therefore decided to assess those existing results in a pre-phase, identify demands for further foresights and select a limited number of topics within the frame of the URBAN EUROPE SRF. This analysis has been performed with the support of the European Foresight Platform.

1.1. Results of foresight analysis

More than 100 foresights with a time horizon beyond 30 years were identified that are dealing with urban issues. Out of those, 40 activities with three different perspectives on urban issues were selected and roughly screened:

- (a) City foresights commissioned by local authorities focussing on a specific urban region (e.g. New York, Amsterdam, Uusimaa-Helsinki, Leeds, ...)
- (b) Higher-level foresights commissioned by national or supra-national actors that do not focus on a particular urban region (e.g. France, Asia Pacific megacities, ...) and
- (c) Sectoral foresights with a focus on specific urban challenges (e.g. energy, mobility, housing ...).

All the screened foresights have in common that they see turbulent times approaching with many uncertainties and big challenges. Even very optimistic scenarios do not ignore the urgency for action with respect to grand challenges and changing framework conditions. Big efforts will have to be made as transitions will take place which affect urban regions in many ways.

Compared to older results, the screened foresights, (most of them not older than 6 years), expect challenges, threats, as well as the innovations required as a reaction, to have a higher impact and speed. Most of the screened foresights deal with the following grand challenges: growth of cities, climate change adaptation and mitigation, calamities (heat waves, flooding...), scarcity of resources (energy, water, food), globalisation, demographic change, migration, safety & security. This is not surprising but it confirms the universality of these grand challenges for urban regions in Europe and worldwide. However, concrete opportunities and threats might differ significantly.

In search of foresights with a particular focus on defining a strategic research agenda like URBAN EUROPE only one activity could be identified that had a comparable time horizon and a similar aim. AGORA 2020, a French *Prospective* from 2005 aimed at formulating research questions for a French research program addressing urban issues. URBAN EUROPE could therefore fill a gap by setting up a cross national foresight activity and looking at AGORA as a good practice example to learn from.

Concluding the analysis of foresight studies it can be stated that

- Many foresights on cities show a local focus and time horizons up to 2020
- Only few meta-level foresights have been performed addressing urban issues as a challenge per se
- Most existing foresights are mainly dealing with incremental innovation and risk management
- A systemic perspective on cities as parts of an interactive network is missing in all of the screened foresight activities

Taking up the holistic approach of URBAN EUROPE these findings offer potential for the following investigations:

- Understanding the role of cities as part of (international) city-networks - Topic: European networks of cities
- Adaptability of cities and the requirement to manage uncertainties – Topic: adaptive urban regions
- Conditions and requirements for radical urban innovations and pioneer cities – Topic: urban innovation drivers

2. Topic 1: Urban megatrends and innovation drivers

Cities are the places where the main future innovation needs will materialize first. They are the places where megatrends, i.e. major and long-standing trends in society, economy and technology, will show their full impacts. This is a big challenge, but it also offers major opportunities for cities to position themselves as pioneering innovation leaders. If they manage to provide the right conditions and settings, they can both stimulate and enable innovative activities, and at the same time tackle long-term urban development challenges.

Development areas within cities and urban periphery can be seen as eco-systems or living labs where such new innovation opportunities can be pioneered and put into practice. They can be understood as breeding places for innovations attracting creative and knowledge workers taking advantage of cultural and professional diversity. The challenge is how to set up such innovation hubs in a global context, how to ensure that the most promising themes are addressed, and how to make them attractive. What are the key success factors for such pioneer hubs? Which conditions, management concepts, infrastructure and/or diversity are crucial for establishing and maintaining such hubs?

2.1. Rationale and Challenge

Cities are going to be confronted with a range of major challenges ranging from demographic change, climate change and other megatrends to economic insecurity, financial deficits and social disorder. Our often fragmented governance systems need to be prepared to tackle these challenges. However, first of all a systematic process of anticipating the issues arising from the joint emergence of these trends and developments is needed, as well as of the interactions between them. It is the combination of these developments that calls for specific attention, pointing to major areas of demand for innovation (innovation challenges).

Next to the exploration of main innovation challenges it is important to consider the settings and conditions for innovation. Already today we can observe new patterns and models of innovation emerging, with users and citizens playing an increasingly important role in the innovation process. New organisational models of innovation are being tested, to realize combinations of social and technological innovations, often supported by social networking technologies. This is the background against which new models of innovation need to be probed

In view of scarce public budgets, it is clear that local governments will need to take an enabling rather than a financing role for such innovations to happen. It needs to provide conducive conditions for innovation and employ its role as major user to stimulate innovation. This is likely to involve ICT and particularly social technology: but it also involves looking at markets, finance and supply chains: social networks and community structures. It also raises questions on spatial planning, built environment and housing forms which may encourage or restrict such processes. Overall, cities need

to become smarter in how they leverage the knowledge and innovation potential, and tackle the main challenges resulting from the megatrends identified.

While attention has focused on ICT-based inroads to realizing ‘smart’ cities, it is clear to many that this can have only limited effect, if the underlying structures of governance and markets are not equally smart. Governance is concerned mainly with the next election: business is focused on short term profit: civil society is driven by sectional interests. In response there are emerging concepts of a wider ‘urban intelligence’ that takes account of the longer-term development perspectives, i.e. capacity for creative innovation, social responsibility and strategic thinking, in every sector of the city.

In the face of these challenges, cities need to become more strategic, innovative and adaptive to exploit upcoming opportunities; the reality is, however, that many forms of governance are slow, inefficient and obsolete.

2.2. Objectives

Against this background, a Foresight action shall be proposed that covers a wide range of topics. However the core concepts and objectives can be summarized, as to explore the role and prospects for ‘urban intelligence’ in the face of major challenges that cities are likely to face in the future:

- Identification and specification of megatrends and the resulting challenges from intersection of these megatrends
- Major areas of innovation challenges and opportunities that are likely to be shared by many cities in Europe. These can be related to
 - economic and financial systems, business networks and supply chains
 - social and community systems, social enterprises, NGOs and other civil society groups and networks
 - environmental and ecological systems, for resource management, infrastructure development, risk management etc.
- Exploration of new models and approaches to stimulate urban innovation enabled by technology, and the requirements that these new approaches raise in terms of framework conditions and institutional settings,
- Exploration of the role and prospects for ICT and value driven social innovation as a catalyst for the above.
- Search for opportunities to improve urban governance systems (and the role of research in supporting them) that include both formal governance structures as well as civil society .

The foresight should not focus on some business as usual scenario, but should provide irritating results, elaborate on the risk of non-action the benefits of (non-)action and shall provide input to long-term strategy development

2.3. Main Questions

Some of the most critical questions can be set out:

1. What are the main megatrends that cities are facing, and what major challenges do result from their intersection?
 - using appropriate quantitative and qualitative methods for identifying the intersections (e.g. socio-economic metabolism and scenario building)

2. What are the major innovation challenges and innovation opportunities resulting from these megatrends?
3. How to improve conditions and settings for innovation and its appropriation (uptake and integration in daily use) for urban sustainability (economic, ecological and social) in order to avoid dependency and vulnerability, and increase the long-term ‘intelligence’ of cities? This touches issues such as local economic development policies, financial system, planning and learning.
4. How to improve urban governance stimulating creativity, technological innovation together with appropriate institutional settings and framework conditions?
 - This touches issues such as learning, networking, involvement of users etc.
5. What is the role and relevance of European Alliance/Network of cities within the global network of cities? (Networks between cities)
6. Overall, how to make links between these different areas in order to generate synergy, new opportunities and added value for the city as a whole?
7. How does knowledge integration in the Foresight exercise work effectively?
8. Who are the stakeholders with respect to the topic and how are they changing over time? Who would be the winners and the losers?

2.4. Building Blocks

- A foresight should include:
 - Integration of knowledge for decision-making + solution (Know-who, know why)
 - Integration of domain-specific knowledge on megatrends by internationally renowned experts in the early phase
 - Access to prior knowledge (Foresights and Academic Research)
 - Learning from the Past – Policy Learning
 - Modelling where appropriate for dealing with the long term perspective
 - Creativity and Imaginative Techniques
 - Open to non-researchers or not-only researchers and Stakeholders
 - Involve the users of Foresight (JPI-Urban Europe, national agencies, research organisations (Research Agendas), cities, ...)

3. Topic 2: European networks of cities

We are facing a competition of global regions and of world cities for motors of growth. In the BRIC countries, fast growing megacities and networks of cities are already competing with Europe on many levels. The core question is: what will be Europe’s challenges and competitive advantage in the light of global long term dynamics? How can cities within networks manage and benefit both from cooperation and competition? Can this be improved intentionally, e.g. by public policies? What should strategic policy instruments look like? How can urban regions, nation states and the

European Project benefit from connectivity taking into account all forms of physical linkages (mobility, logistics, ICT ...).

3.1. Rational and Challenge

The relationship between cities shows an interesting combination of competition (conventional economic thinking) and collaboration (more recent thinking on innovation ecosystems). This can take place between adjacent cities, regionally and nationally, or in the global system of cities and markets.

Taking into account that competition between cities in Europe and beyond promotes specialisation: this leads to both a division of roles and a specialisation on specific functions in networks of cities, which in a cumulative process generates cooperation alongside competition. Ways to strengthen cooperation and interaction would benefit urban regions as well as nation states and the European Union.

This generalized view of cooperation suggests 'the city' as a thing: in reality the 'urban arena' is more like a site where firms, markets, entrepreneurs and consumers are all concentrated, each with their various networks, supply chains, virtual markets, client communities and so on. So to be more realistic, the challenge for this Foresight is to identify the added value of the 'city' as a location, which acts through the many types of infrastructure and support systems, both physical and human.

3.2. Objectives

The main goal of the foresight should be to develop shared visions and options for the future of European networks of cities and or a specific network of cities, involving stakeholders from several cities. This should demonstrate how a concrete network of cities can identify win-win situations and to find a balance between competition and cooperation. Such networks of cities could be defined in terms of interactions involved (scientific cooperation, knowledge based services, value chains, innovation processes ...) or in terms of urban infrastructures (e.g. energy, housing, transport, ICT ...), industry, diversity and cultural aspects.

3.3. Main Questions

The foresight should help to find appropriate forms of co-opetition (cooperation and competition) between cities, urban regions, cross-border regions in the European wide network of cities for the benefit of urban regions, nation states and the European Project. This includes urban infrastructures (e.g. energy, housing, transport, ICT ...), industry, diversity and cultural aspects.

1. How robust are metabolic-networks (for mobility, logistics, communication ...) on which city networks are reliant, taking into account increasing uncertainties of framework conditions such as energy prices and availability, climate change effects or changing growth poles?
2. What kind of "formal" networks do we need to deal with future flows and collaborations?
3. What are ingredients of leading cities or networks of cities? What are possible configurations of city networks
4. How to enhance the competitiveness of European Cities / city networks at the global level, taking into account scale effect?

4. Topic 3: Adaptive urban regions

The adaptability foresight could address topics as broad as city management, infrastructures, urban ecology or uncertainty management helping to better understand and anticipate challenges ahead

of us in a world of growing population and megacities, shrinking or growing populations in different European cities and agglomerations, growing conflicts, shrinking resources and global and local climate change. Probably the most important question to be asked is: How can urban regions become able to adapt to new and often unexpected opportunities and threats influencing their development as centres of economic activity and the wellbeing of the urban population? In addition infrastructure related adaptability strategies could be addressed in order to deal with the core question of how to develop and maintain urban infrastructures in the light of expected and yet unexpected environmental challenges related to local climate change and resource availability. This could take into account the consequences of the financial crises on public and private budgets for large scale investments and maintenance costs.

4.1. Rational and Challenge

Governance – meaning public interest decision-making and management of public services – is in a state of flux. The boundaries are being redrawn between market and state: between different sectors and professions: and between different levels from local to global. Expectations are rising, while the public trust in politics and public services, in many places is falling.

Conventional governance and policy analysis often assumes that policy effects are measurable, that public / private sectors are separate, and that organizations deliver outputs for clear objectives, based on evidence of problems. But the real world often seems more complex. We are surrounded by ‘wicked’ problems without direct solutions, and policy challenges which are multi-level, multi-objective and multi-stakeholder. From practical experience, success may depend not only on **more or better** governance, but on **new forms** and systems of governance.

So we can look at the challenges for urban governance in more than one way – from dealing with the problems of the present, to the challenge of how to respond, adapt and evolve in the future. As global capital spreads further, urban governance is not only about ‘running the city’, but about ‘running to catch up with the city’ as it changes and evolves.

4.2. Objectives

The direct objectives would be to explore and compare different modes of urban governance, including:

- Market oriented: prioritizes the private sector, inward investment, focus on more mobile and higher income groups.
- Network orientation: prioritizes the interaction of different stakeholder groups and civil society to elaborate sustainable solutions
- Community oriented: prioritizes more self-organized localized improvement of skills, enterprise, and social economy.

Participation of stakeholders should be broad and focussed on areas related to large uncertainties. The foresight should consider participation of stakeholders from the financial sector particularly of reinsurer.

4.3. Main Questions

Some of the main questions addressed by this foresight include:

- How can urban governance ensure adaptation to complex fast changing cities and global-urban communities?

- How should urban governance ensure that city governments engage with other partners, finance and business, citizens and community groups, NGOs and lobby groups, landowners and infrastructure providers in a way that improves the adaptability of a city and its management?
- Are there new opportunities for improving governance, through social-ICT: new forms of finance and exchange: new forms of partnership and collaboration: new forms of inter-urban/regional or urban-rural working?
- How does knowledge integration in the Foresight exercise work effectively?
- What are the limits of adaptation and how to cope with tensions and need of flexibility?
- What are governance mechanisms for long term solutions?

Urban Europe Foresight Workshop

Date: 7. November 2011, 10:00 – 16:00

Location: AIT Foresight & Policy Development, Tech Gate Vienna, 7th Floor, Donau City-Straße 1, 1220 Vienna

The workshop is held in cooperation with the European Foresight Platform

The vision of the JPI Urban Europe is to fundamentally rethink and manage the dynamics of urban development in Europe to sustain and enhance urban areas as a place of vitality, liveability and accessibility. To reach these aims Urban Europe provides a systemic and human-centered approach which takes utmost advantage of emerging technologies, assessing their potential and socio-economic impacts and utilising them in fundamentally new urban policies and design strategies.

Foresights are an important instrument to enable broad stakeholder participation in the development of long-term scenarios and the elaboration of research, innovation, policy and business strategies. The JPI Urban Europe focuses on a long-term perspective (2050 and beyond), utilises foresight activities to determine substantial new insights into urban requirements and developments with a long-term time horizon of 2050+, and develops urban scenarios and contribute to a long-term research agenda.

For identification and elaboration of most relevant foresight topics in the context of urban development foresight experts and interested representatives of Urban Europe are invited to a workshop series. While the first workshop, organised by the European Foresight Platform, resulted in the identification of three main foresight topics, this second workshop aims at elaborating these topics in more detail and taking next steps towards a call for a first Urban Europe foresight activity beginning of 2012. In particular the workshop should formulate key elements of a first Urban Europe foresight activity with special emphasis on key questions, relevant stakeholders as well as methodological aspects.

Programme:

+	10:00 hrs	<p>Welcome, introduction of participants (Margit Noll, <i>Vice Executive Director, Joint Programme Initiative Urban Europe</i>)</p> <p>Introduction to JPI Urban Europe: Central questions and desired outcome of the workshop (Margit Noll, <i>Vice Executive Director, JPI Urban Europe</i>)</p> <p>Presentation of key-results from the EFP Policy-Workshop on Screening Urban Foresight from April 2011 (Klaus Kubezcka, AIT – Foresight & policy Development)</p>
	10:20 hrs	<p>Chair: Matthias Weber (<i>Head of Unit Research, Technology and Innovation Policy, Austrian Institute of Technology</i>)</p> <p>Presentation of the draft outline for 3 potential foresight topics for the pilot phase (Margit Noll, AIT)</p> <p>Presentation of the Finish foresight activities (Ilmari Absetz, Tekes)</p> <p>Discussion of the outline and setting of the working sessions</p>
	11:00 hrs to 15:00 hrs	<p>Working Sessions to elaborate Foresight topics for the pilot phase (depending on the number of participants, sessions can be held in parallel or consecutively)</p> <ul style="list-style-type: none"> • Discussion of these topics with special emphasis on key questions, critical aspects, • Expected role for the Strategic Research Agenda of Urban Europe • Foresight methods, participation of relevant stakeholders ...
	11:00 hrs	Session on Theme 1: Urban Megatrends – the world of cities in 2050
	11:45 hrs	Session on Theme 2: European Networks of Cities
	12:30 hrs	Lunch
	13:00 hrs	Session on Theme 3: Adaptive Urban Regions
	13:45	Reports from the Sessions 1 – 3 by the rapporteurs
	14:10 hrs	Coffee Break
	14:25 hrs	<p>Formulating key elements of a first Urban Europe Foresight, Chair: t.b.a.</p> <ul style="list-style-type: none"> o Key elements for a first Urban Europe 2050+ foresight activity o Methodological aspects and foresight procedures
	16:00 hrs	End

Urban Europe Foresight Workshop

Date: 7. November 2011, 10:00 – 16:00
Location: AIT Foresight and Policy Development
 Tech Gate Vienna, 7th Floor, Donau City Straße 1, 1220 Vienna

List of Participants

Charreyon-Perchet Anne	CGDD/DDD3, France	<i>Anne Charreyon-Perchet</i>
Jan Francke	Netherlands Institute of Transport Policy Analysis	<i>Jan Francke</i>
Ioan M. Ciomasu	University of Versailles, France	<i>Ioan Ciomasu</i>
Nina Grisot	Embassy of France	<i>Nina Grisot</i>
Absetz Ilmari	Tekes, Finland	<i>Absetz Ilmari</i>
Klaus Kubezcko	AIT F&PD, Austria	<i>Klaus Kubezcko</i>
Margit Noll	Urban Europe, AIT, Austria	<i>Margit Noll</i>
Paul Pichler	Potsdam Institute for Climate Impact Research, Germany	<i>Paul Pichler</i>
Hans Günther Schwarz	BMVIT, Austria	<i>Hans Günther Schwarz</i>
Dominic Stead	TU Delft, Netherlands	<i>Dominic Stead</i>
Matthias Weber	AIT F&PD, Austria	<i>Matthias Weber</i>
HARDT NOLL		

Protocol of Flip Charts (FC)

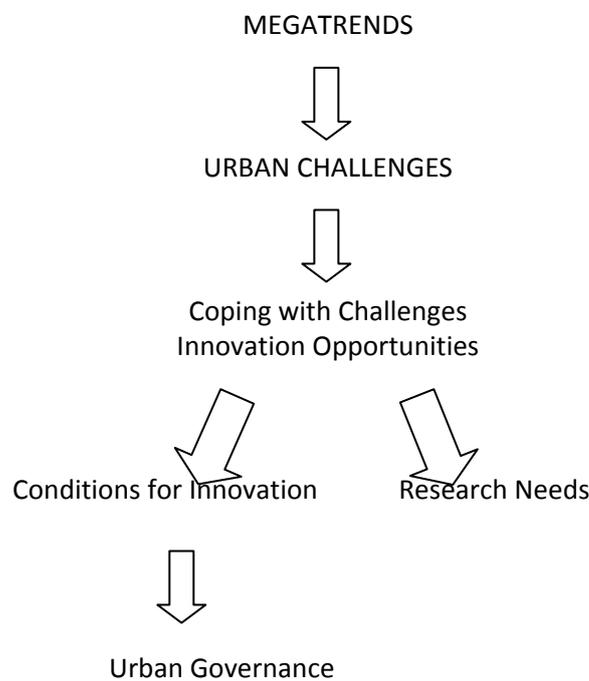
FC1

PROCESS

- Revisit Rationales and Objectives (- 15 min.)
- Amend, revise and specify research questions (- 30-45 min.)
- Suggest suitable methodological inroads

FC 2

TOPIC 1



FC 3

TOPIC 1: Urban megatrends and innovation drivers

Objectives: The role for ‘urban intelligence’

- Identification and specification of megatrends + challenges due to their intersection
- Major areas of innovation challenges and opportunities
- Exploration of new models and approaches to stimulate innovation
- Role and prospects for CIT and ‘social technology’
- Opportunities to improve urban governance

Technology as an enabler

Social innovation – value driven

METHOD: whom to involve in a FS process

Formal governance vs./+ social movements

FC 4:

TOPIC 1

Meaning of 'Innovation'

- Problem-centered approach
- Bottom-up learning-by-doing
- Reflexive learning
- Is this too "adaptive"
- Measurement of impacts difficult

Not restricted to technol. innovation

- Governance of innovation
- (Mega-) urban innovation + urban environment for innovation

Trends in Governance

- constrain/frame innovation
(e.g. global/intimat. of governance, changing boundaries of responsibilities, growing financial autonomy, capital flows)
- Partnerships between public –private sector
- New business models of innovation and experimentation, up scaling
- Competition between cities

Role of cities in innovation

- Largest investor – end of innovation chain

FC 5:

European vs. Global megatrends

- European Urban Challenges
or / and
Global Urban challenges?
→ fast change
- } some are joint

MEGATRENDS

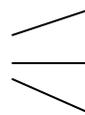
- Don't look at growth only, but also at 'shrinking cities in decline'
-) Resilience -) Japan, China (2040)
- Differentiate by types of cities (T. Sevcik)
-) also: Primary and Secondary Urban Areas
- Growth Shifts to CEEC Development
-) avoid the economic downtown
- Take scenarios of European development into account
- Urban-Rural Interdependencies
Matter: - Transformation
 - Convergence (Job Profiles)
 - Also between NW of Cities + Rural Matrix
 - Mobility of the 'Well-Trained'

FC 6:

TOPIC 1

METHODOLOGY

- Can new methodologies be developed

- Megatrends 

or scenarios multiply

2 Phrases

1. → quick wins
2. → solid methodology

FC 7:

Building Blocks	Organisations
Integration of knowledge for decision-making + solution, system of systems (Know-who, know why)	
Domain-specific knowledge on megatrends ('gurus') in the early phase And/or Access to prior knowledge (FS + Academic)	
Modeling? Some System Dynamics?	
Creativity and Imaginative Techniques? <ul style="list-style-type: none"> - Open to non-researchers or not-only researchers and Stakeholders - Involve the users of FS (UE, Agencies, Ros (Research Agendas), cities (Policies Indus.)) 	
Learning from the Past – Policy Learning	

FC 8:

Risk Taking

- Point to Irritating Results
- Risks of non-action benefits of (non-)Action
- Input to long-term strategy formation

Adaptability

- Trends to down play normative elements

FC 9:

TOPIC 2: European networks of cities

Objectives: develop shared visions and options for the future of a specific network of cities

- How a network of cities can balance between competition and cooperation
- Investigate different dypes of interactions involved

FC 10:

TOPIC 2: Relationships between European cities

- UE to enable cooperation between cities
Cities may be leading rather than MS!
- Models for how to facilitate cooperation
Differentiate by types of cities
“Division of labor between cities” – as a vehicle for cooperation between countries (Paris)
- How to differ from existing networks? (e.g.) in energy, certain industries...)
What is expected?
This is more about “emerging” collaborative patterns / specialization rather
Than formal networks”
 - “Ecology of cities”, “metabolism”

TOPIC 1 -> Megatrends scenarios:

- Are patterns of collaborative / networks “resilient” w.v.t. scenarios?
- How should they look like? E.g. in terms of coop / comp. globally / EU

FC 11:

- What are ‘ingredients’ of leading cities, or networks of cities?
 - “Different configurations” possible”
- How to enhance the competitiveness of European cities/city networks at global level? –
Module depends on scale you look at
- Networks:
 - collaborations (formal / informal)
 - physical
 - flows
 - Robustness of physical NWs?
 - ‘Physiology’, metabolic NWs
 - What kinds of ‘formal’ NWs do we need to deal with future flows and collaborations?
 - Also institutional / regulatory barriers to remove!
 - Medium-term will differ from long-term

FC 12:

TOPIC 3: Adaptive Urban Regions

Objectives: explore and compare different modes of urban governance

- Market-oriented
- Network-oriented
- Community-oriented

FC 13:

TOPIC 3: Adaptive Cities

- Need to prepare for unexpected Change!
- The most fundamental topic”
- Pop. Growth, demand in EU may decline
- Adaption < --- > Rigid Structure of Buildings and climate change

- How to cope with this tension?
- What is the room for maneuver
- Beyond trends from Topic 1
 - The unknown unknowns! Wildcards, black swans
 - What institutions to deal with them?
 - Sure NL security planning!
 - Insurance, Anticipation of risks
- Governance capacity / levels implying sub-optimal outcomes
- Need for long-term Solutions vs. quick fixes!
 - What governance mechanisms do we need?
- Should we really think about governance?
 - Is physical resistance more important?
 - Is preparedness of individuals more important?

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Annex 1: Documentation of the Workshop results on relevant issues for urban regions

Based on the impact factors and key drivers derived from the screening of foresights (see Table 3), the list was first completed by the participants in 2 working groups, one concentrated on economic development, technological and financial issues, the other group concentrated on policy, people and the environment. In a second step, the participants had the opportunity to evaluate the importance of the issues as well as the uncertainty that is related to this issue in respect to the impact it may have on urban development in Europe. The evaluation was done in the form of a voting, by the participants who could distribute 5 point for importance in terms of a high potential impact and relevance from a national or cross-national perspective and 5 points for uncertainty in terms of high degree of uncertainty and relevance from a national or cross-national perspective to any of the issues. There was no limitation in giving more than one point to one issue.

Issue	Importance	Uncertainty
Economic Development		
Global division of labour		
China and other fast developing emerging economies, especially central governed economies	2	8+1
Knowledge base, Migration of knowledge workers. - Europeans going elsewhere or migrants going back to their home countries? - Knowledge workers or knowledge managers? - Knowledge workers related to ageing society: import knowledge workers?	2	6
New business opportunities in bio- and nanotechnology		
New markets: Globally, but local attractiveness		1
Attractiveness: - Attractiveness of European cities for skilled people? Quality of Life? - Competition between cities in terms of attractiveness - Urban areas need rural areas - Changing balance in terms of attractiveness - Systems of elements / dimensions in urban context resulting in attractiveness	8	3
Accessibility services in short time	1	
Individual global sourcing		
Technology		
Service related developments in healthcare, logistics and creative industries	7	
ICT, biotechnology and nanotechnology as general purpose technologies		
Intelligent infrastructure		
Smart grids, energy producing buildings, heating & cooling, selling energy, incentives to switch to green		
Smart mobility, automated vehicles, non-mobile connectivity		
Opportunity of renovation: adaptable cities	2	4
Waste management, better use of waste, urban mining	1	

Technology and business models go hand in hand		
Eco-system services		
Increase or decrease of mobility: how will demand for transport develop because of online and virtual services.		
Mobility of services and mobility of infrastructure	3	
Proximity: concentration, economic of scale, ageing requires more services and proximity	1	
Financing		
Cost and benefits of quality of life		
Long term infrastructure investment: financing and decision making	7	4
Climate change adaptation		
Calamities in the insurance sector		3
Related to demography		
Financing by governments in other states, transnational ownerships of infrastructure and resources		5
Financing parts of cities by investment companies	2	
Resource crisis: scarcity and higher prices		5
True price for resources		
Social entrepreneurship		
Policy		
Climate policy		1
Resource scarcity	1	2
Inter- and inner urban connectivity	4	
Safety and security	1	
Maintenance costs of urban infrastructures		
Competing cities and attractiveness of cities		
Multi level governance processes	1	8
Urban rural interfaces	2	
Participation in policy development	4	2
Policy in the age of deficits	1	2
Challenge of innovation & policy		2
Science policy interface	2	
Urban planning policy	1	
Risk assessment – uncertainty management	6	1
People		
Diversity of people		
Housing	1	
Ageing	2	
Employments and skills		
Changing life styles and behavior and diversity	5	6 or 10?
Precariousness, poverty and marginalization	1	4?
Quality of life	4	
Cultural change		
End of affluence		
Protection against threats		
Full inclusion into society	3	3
Accessibility to social innovation	1	4
Social technology		2

Health		
Education	1	
Segregation	1	
Commuting		
Environment		
Climate change adaption	4	2
Landuse	1	
Urban metabolism – efficient use of resources and structural change of societal metabolism	2	2
Health and environment	1	1
Energy security and reliability	2	4 (+5?)
Security and sustainability of food production	1	3
Eco-system services	6	

Annex 2: Proto themes for Urban Europe Foresight 2050+

From EFP-policy-workshop on 28th April 2011, three Proto-Themes were developed and further elaborated to a selection of 9 themes based on the discussions of the working groups.

This version includes

- 4 fully-fledged themes from Proto-Theme 1 - Adaptive Cities
- 3 fully-fledged themes from Proto-Theme 2: The Future of European Clusters & Networks of Cities
- 2 fully-fledged themes from Proto-Theme 3: Urban Innovation Eco-systems

Authors: Klaus Kubeczko, AIT and Joe Ravetz, Univ. of Manchester

Proto-Theme 1: Adaptive Cities / Urban Regions

Over several decades, Europe was favoured by relatively stable economic, social and ecological framework conditions for development of urban regions. It is now widely acknowledged that large transitions have to be expected over the next decades, and that turbulent times lie ahead, with increasingly unstable framework conditions. The sources of such turbulence range from financial crises, public debt, geopolitical constellations, political instabilities, to resource scarcity and price fluctuations, as well as to extreme weather events. They may lead to new threats but also to new opportunities for the development of urban regions.

Given the wide spectrum of unstable and often interdependent factors relevant for urban issues, complexity, acceleration and magnitude of change become a challenge of higher order. Changes will likely be more far reaching and faster; therefore the capacity to deal with complex challenges will be a matter of competitive advantage and resilience of urban regions.

The capacity of urban regions to adapt becomes more important as changes are expected to be far reaching and even radical. It requires new concepts, processes underlying strategic action in various fields: managing cities; investing in infrastructure and in maintaining it; developing and running energy systems; developing transport systems ...

The 'Adaptive City' Foresight approach could address topics as broad as city management, financing infrastructures, urban ecology or uncertainty management, helping to better understand and anticipate challenges ahead of us.

The main question to be asked is: How can urban regions build their capacity for adaptation to threats and opportunities influencing their development as centres of economic activity, societal and cultural life, and the wellbeing of the urban population? Which open questions can be identified, helping to improve the adaptability of urban regions?

For instance -

When there is no way to translate uncertainty into quantifiable risk, established modes in the insurance sector for property investment might change, e.g. when buildings are subject to multiple risks which are not easily measured, how will they find insurance?

Theme 1.1: URBAN ECOSYSTEM SERVICES	
Theme / title	<ul style="list-style-type: none"> • <i>Towards an ecology of urban living:</i> • <i>city-nature harmony</i>
Rationale and challenges	<p>The majority of the world's population is now urban, and cities are responsible for the majority of global energy and resource use: so the prospect for the global environment now depends on its cities. Likewise, in an age of global insecurity and scarcity, cities should not have to rely on ever-growing levels of imported resources.</p> <p>The concept of Eco-System Services (ESS) was proposed by the Millennium Ecosystem Assessment (UNEP 2005), as a set of functions provided to human society by natural ecosystems. Recently, 'The Economics of Ecosystems and Biodiversity' ('TEEB') takes these functions into the economic realm, with a range of valuation and market methods.</p> <p>While there is much research on ESS, there are large gaps between different approaches – technical studies and future studies, policy or business studies, or wider critical perspectives which highlight the role of power and wealth in the control of ESS. In particular, the dynamics of cities and urban development – often chaotic, self-organizing and profit-seeking - point in the opposite direction to the ideal of strategic policy / adaptive management for urban ESS. This suggests a Foresight programme which addresses both direct challenges and their implications for new forms of knowledge co-production.</p> <p>Direct challenges:</p> <ul style="list-style-type: none"> • How to sustain the provision of urban food, water, energy and material resources: in a world of growing population, rising demands, growing conflicts and shrinking resources. • How to enable urban areas to adapt to or develop suitable habitats and micro-climates, with security from floods and natural / human disasters. <p>General challenges:</p> <ul style="list-style-type: none"> • Many of the most important questions on urban-ESS have no clear methods & tools. • So the proposal here should be different to research in the FP7 and similar, which requires clear methods & tools • The Foresight approach aims to explore such questions & challenges: uncertainty, complexity, gap between governance units & problems, failures of markets / institutions, social / political conflict, ethical dilemmas.
Purpose / Objectives	<p>Main objectives:</p> <ul style="list-style-type: none"> • Explore the prospects for the provision of urban food, water, energy and material resources: • Provide advice to urban areas on how to adapt / develop suitable

	<p>micro-climates, with security from floods and natural / human disasters.</p> <ul style="list-style-type: none"> • Test a range of city models / concepts / governance systems which focus on the ESS • Test a range of economic models / financial / market / institutional mechanisms which can enable adaptive management of urban ESS. <p>This will be useful to researchers, policy-makers, investors and civil society.</p>
Specifying Urban Region and systems addressed:	The Urban-ESS Foresight would address firstly the City System: but also is relevant to City Clusters / Network of Cities. Likewise, the relevant governance levels will include urban, regional, national and international levels of policy.
Main Questions	<p>Direct questions:</p> <ul style="list-style-type: none"> • How to sustain the provision of urban food, water, energy and material resources: in a world of growing population, rising demands, growing conflicts and shrinking resources. • How to enable urban areas to adapt to or develop suitable micro-climates, with security from floods and natural / human disasters. <p>Wider questions:</p> <ul style="list-style-type: none"> • What are the implications for urban policy & governance of the ESS approach? • How to plan, manage, finance, cities / clusters / networks for greater efficiency & equity in ESS
Impact Factors / Trends /Drivers	<ul style="list-style-type: none"> • Global trends include: growing population, rising material affluence and consumer demands: accelerating climate change: shrinking reserves of resources and biodiversity: growing levels of conflicts and insecurity. • Urban trends include: urban expansion, agglomeration, restructuring, counter-urbanization & re-urbanization. • Socio-economic trends include: financialization, privatization, social exclusion, economic vulnerability • Governance trends include both problems of fragmentation and distrust, public deficit and asset sales: • There are also governance opportunities in new social movements, new institutions, new technology & ICT potential.

Theme 1.2: ADAPTIVE INFRASTRUCTURE	
Theme / title	<ul style="list-style-type: none"> • <i>Fixed or flexible: adaptive infrastructure for the 21st century</i> • <i>Beyond pipes & wires: towards a network of networks</i>
Rationale and challenges	<p>Cities have evolved around the distribution networks and technologies of energy, water, waste, transport and communications. However there are strong pressures for change, and signs of new thinking on a more adaptive approach to infrastructure. There are different factors involved:</p> <ul style="list-style-type: none"> • Technology factors: autonomous decentralized energy and water: wireless communications: responsive transport modes etc: • Socio-economic factors: rising costs of centralized supply of water, energy, waste disposal etc. • Governance factors: challenges of planning and regulation, in a privatized, de-regulated political landscape. <p>In particular there is a clear policy dilemma and research challenge: how to provide efficient infrastructure – relatively fixed with long-term planning / financing – for a urban structure which is increasingly fluid, networked and responsive to changing lifestyles and conditions. Even the boundaries of the city can no longer be assumed, with the growth of fringe and edge cities, peri-urban landscapes and regional agglomerations.</p> <p>Current research tends to address each service on its own, and tends to assume standard paradigms on fixed and centralized infrastructure. In contrast, this Foresight would address the frontiers – flexible, responsive infrastructure for fluid, networked urban systems.</p>
Purpose / Objectives	<p>The direct objectives would include:</p> <ul style="list-style-type: none"> • Explore the technologies involved in the move to ‘adaptive infrastructure’ for provision of water, energy, waste, communications etc. • Explore the potential for ‘intelligent infrastructure’ which uses networks of sensors and controls to improve efficiency and effectiveness. • Test a range of economic and finance models: and a range of institutional and regulatory models to encourage this. • Identify the implications for urban planning, construction and property markets, and urban governance in general <p>The wider objectives include:</p> <ul style="list-style-type: none"> • Examine the technology pathways, innovation systems, transition and path-dependency issues, which are relevant to the adaptive

	<p>infrastructure.</p> <ul style="list-style-type: none"> • Explore the science / engineering research issues, for innovation on a different paradigm of urban adaptive infrastructure.
Specifying Urban Region and systems addressed:	<ul style="list-style-type: none"> • This foresight addresses firstly the level of the Adaptive City: it also extends outwards to City Clusters / Network of Cities • Policy makers at local, urban, regional, national and international level would be involved in this foresight. • Also the role of the private sector is important, including finance, utilities, technology companies, local providers and inter-mediaries.
Main Questions	<ul style="list-style-type: none"> • How to provide infrastructure technology in a way which is flexible, adaptive, responsive to changing needs and opportunities • How to structure markets and financial mechanisms to encourage adaptive infrastructure • How to structure governance to encourage adaptive infrastructure
Impact Factors / Trends /Drivers	<p>Technical trends and drivers:</p> <ul style="list-style-type: none"> • Rising costs of raw material and regulatory standards • Advances in autonomous and decentralized technologies • Advances in information sensing and control systems <p>socio-economic trends and drivers:</p> <ul style="list-style-type: none"> • Rising standards of comfort and service provision (e.g. 100Mb wireless becoming standard) • Search for innovation tends to overcome efficiency gains from new technology (e.g. patio heaters, tumble driers...) <p>Governance trends and drivers:</p> <ul style="list-style-type: none"> • Liberalization, privatization and de-regulation of most forms of urban infrastructure in most EU cities. • Public finance deficits and new models for cost recovery: • New forms of partnership / collaborative institutions with new forms of financial models <p>Wider paradigms in technology and infrastructure:</p> <ul style="list-style-type: none"> • Smart / embedded infrastructure: beyond centralized supply-focused pipes & wires.

Theme 1.3: ADAPTIVE LIVING - TOWARDS THE HUMAN CITY	
Theme	<ul style="list-style-type: none"> • <i>adaptive living - towards the human city</i> • <i>citizen, community, civitas</i>
Rationale and challenges	<p>As Europe moves towards a post-industrial, service-sector economy, the quality of life in cities becomes more crucial to their success. And yet such quality of life is under pressure from all sides: insecure employment, urban noise and pollution, crime and social disorder, public sector deficits. The effects of climate change are expected to push urban environmental conditions to beyond human comfort. The typical response for those who can afford it, is to move out to the suburbs and peri-urban areas: but this generally accelerates the decline of the inner urban areas.</p> <p>So, there is a crucial and urgent agenda to understand and improve the quality of life in cities. At present this is spread around many disciplines, with many gaps: and it's clear that new approaches are needed, combining emerging fields such as behavioural economics, cognitive science, complexity studies, urban anthropology, architectural psychology and so on. Many of these go beyond the functionalist / rationalist approach towards a more 'relational' approach, i.e. working with a) multiple actors, b) multiple types of interactions, c) multiple forms of perception and intelligence.</p> <p>General challenges include:</p> <ul style="list-style-type: none"> • Many of the most important questions on human-centre urban experience lie between or beyond existing methods & tools. So this is different to research in the FP7 and similar, which requires clear statements of research methods and results. • This also raises a research challenge: how to generate useful & robust data in complex and qualitative action-research situations • The Foresight approach aims to explore such questions & challenges: uncertainty, complexity, gap between governance units & problems, failures of markets / institutions, social / political conflict, ethical dilemmas.
Purpose / objectives	<p>The main objectives of this Foresight include:</p> <ul style="list-style-type: none"> • Explore fundamentals of the 'urban quality of life', as perceived by citizens and stakeholders in various ways: • Explore the policy approaches (spatial, economic, social, and institutional) – which would encourage moving towards a 'human' scale liveable city. • Test a range of research approaches which are involved in this task.
Specifying Urban Region and systems addressed:	<ul style="list-style-type: none"> • This Foresight addresses mainly the level of the Adaptive City: • A wide range of stakeholders and citizens is at the centre of this Foresight, possibly with a programme of citizen's panels, charrettes,

	<p>open space meetings etc.</p> <ul style="list-style-type: none"> • Policy makers at local, urban, regional, national and international level would also be involved in this foresight. • The private sector has an important role, as providers of built environment, employment, services and culture / leisure facilities.
Questions to be addressed	<p>Main questions to be addressed:</p> <ul style="list-style-type: none"> • How do people perceive the city around them? • How do they experience different types of location • What motivates their day-to-day decisions? • Which spatial patterns, economic structures, or public institutions are likely to produce greater benefits & added values
Impact factors / trends / drivers	<p>Many urban trends are relevant:</p> <ul style="list-style-type: none"> • Public sector deficits and reducing services • Insecure / underpaid employment, particularly for young people • Shortage of housing, with rising prices & falling standards. • Social exclusion, fragmentation, gap widening • Migration, cultural conflict, ethnic tension • Alienation, depression, addiction, social pathologies • Globalization & de-territorialization, • Climate change effects (heat waves, flood, storm etc) will be accelerated in urban areas.

Theme 1.4: ADAPTIVE GOVERNANCE	
Theme	<ul style="list-style-type: none"> • Who runs this place? adaptive governance for the city of tomorrow • Running the city, or running to catch up with the city?
Challenges	<p>Governance – meaning public interest decision-making and management of public services – is in a state of flux. The boundaries are being redrawn between market and state: between different sectors and professions: and between different levels from local to global. Expectations are rising, while the public trust in politics and public services, in many places is falling.</p> <p>Conventional governance and policy analysis often assumes that policy effects are measurable, that public / private sectors are separate, and that organizations deliver outputs for clear objectives, based on evidence of problems. But the real world often seems more complex. We are surrounded by ‘wicked’ problems without direct solutions, and policy challenges which are multi-level, multi-objective and multi-stakeholder. From practical experience, success may depend not only on more or better governance, but on new forms and systems of governance.</p> <p>So we can look at the challenges for urban governance in more than one way – from dealing with the problems of the present, to the challenge of how to respond, adapt and evolve in the future. As global capital spreads further, urban governance is not only about ‘running the city’, but about ‘running to catch up with the city’ as it changes and evolves.</p>
Specifying Urban Region and systems addressed:	<ul style="list-style-type: none"> • This Foresight addresses firstly the level of the Adaptive City: it also extends further to City Clusters / Network of Cities • Policy makers at local, urban, regional, national and international level would be involved in this. • A broad community of stakeholders is also involved: citizens, community groups, NGOS, education, health, media, culture, sport, trade unions, faith groups, ethnic groups etc. • Also the role of the private sector is important, including finance, utilities, technology companies, local providers and inter-mediaries.
Purpose / objectives	<p>The direct objectives would be to explore and compare different modes of urban governance, including:</p> <ul style="list-style-type: none"> • Market oriented: prioritizes the private sector, inward investment, focus on more mobile and higher income groups. • Community oriented: prioritizes more self-organized localized improvement of skills, enterprise, and social economy. • Built environment oriented: prioritizes the physical condition, urban design dimension, and ecological metabolism. <p>A more general aim will be to explore how research can be improved and focused on the new governance challenges: not only about rational –</p>

	functionalist modes, but a more responsive and relational approach, based on the inbuilt complexity of governance systems.
Questions	<p>Some of the main questions addressed by this foresight include:</p> <ul style="list-style-type: none"> • How can urban governance adapt to complex fast changing cities and global-urban communities? • How should urban governance engage with other partners: finance and business: citizens and community groups: NGOs and lobby groups: landowners and infrastructure providers? • Can the representative democracy system be improved with greater levels of participation and engagement? • Are there new opportunities for improving governance, through social-ICT: new forms of finance and exchange: new forms of partnership and collaboration: new forms of inter-urban / regional or urban-rural working?
Impact factors / trends / drivers	<p>the context shows flux and transition on all sides:</p> <ul style="list-style-type: none"> • Urban / local government, and systems of governance, are changing: democratic engagement and citizenship in many countries is shrinking: public financial deficits are rising: public services are being cut. • The role of global finance and external investment is growing: most infrastructures are privatized: urban development is driven by housing and property finance which is insecure and vulnerable: most businesses lose their local connections. • Cities, urban systems and communities are changing: much activity is on the fringe or in the peri-urban areas, where governance is typically fragmented

Proto-Theme 2: The Future of European Clusters & Networks of Cities

Globally the growth of cities is a trend that is expected to continue over the next decades. Hence, Europe is facing a competition of global regions and of world cities for motors of growth. BRIC countries' fast growing megacities and clusters of cities are already competing with Europe at different levels.

Europe's position as knowledge based society could be strengthened by its competitive advantage of the well connected network of European cities allowing for fast interaction through well established institutional linkages in industry, science, finance, policy and culture as well as infrastructures of all kinds, be it transport, energy, ICT or research. Critical masses could be reached faster, more flexible and more efficient.

As cities are not randomly distributed in terms of size or functions, they stand in some relation to each other, and can be spread spatially (global, regional, national ...) or within institutional boundaries (EU, nation states ...). Such networks of cities comprise of cities as nodes in an interacting network. Main factors explaining the diversity of urban regions in respect to size are accessibility within the network and the capacity to innovate and to adapt innovations. Cities play different roles and have different positions in different networks at the same time.

Long term foresights, so far, have been addressing local aspects of cities with local stakeholders and plans, strategies or visions for an urban region. However, foresights with stakeholders from a network of cities with shared challenges, vision or strategies are rare.

A different focus of foresights addressing more general questions on urban issues, not specific to one particular city, has been taken with stakeholder groups at different governance levels. Again, to look at networks of cities from a meta-perspective is rare.

The main goal of a foresight activity should be to develop visions and options for the future of different kinds of networks of cities in support of a knowledge based society.

This raises questions on the possibilities of fostering a competitive advantage of Europe by strengthening networks of cities. The concept of 'poly-centricity' has been researched and promoted in various ways: but again the wider possibilities of structural change, new local-global relations, and different worldviews, need more exploration in a Foresight mode rather than disciplinary research. Taking into account the complexity of multiply linked cities and evolutionary characteristics making such networks resilient to external threats, foresight can help to identify these wider research questions. This will enable a better understanding of the fostering and hindering factors for European cities, in the context of the networks they are embedded in, and to provide directions for new policy agendas.

These 'urban network' Foresights should also take into account that the concept and definition of 'what is a city' is shifting, with the rise of peri-urban fringe areas, edge cities, airport cities, agglomerations, and mega-cities. There is also a widening of perspectives, from the previous functional approach to more cognitive and experiential approaches such as in behavioural psychology and economics, cultural and community studies, quality of life studies, information theory and 'spaces of flows', and generally a more relational view of how cities work and how their residents perceive them.

Theme 2.1: COMPLEMENTARY & COMPETING CITIES	
Theme	<ul style="list-style-type: none"> <i>Friends or rivals? Complementary & competing cities</i>
Rationale and challenges	<p>The relationship between cities shows an interesting combination of competition (conventional economic thinking) and collaboration (more recent thinking on innovation ecosystems). This can take place between adjacent cities, regionally and nationally, or in the global system of cities and markets.</p> <p>Taking into account that competition between cities in Europe and beyond promotes specialisation: this leads to both a division of roles and a specialisation on specific functions in networks of cities, which in a cumulative process generates cooperation alongside competition.</p> <p>Ways to strengthen cooperation and interaction would benefit urban regions as well as nation states and the European Union.</p> <p>This generalized view of cooperation suggests ‘the city’ as a thing: in reality the ‘urban arena’ is more like a site where firms, markets, entrepreneurs and consumers are all concentrated, each with their various networks, supply chains, virtual markets, client communities and so on. So to be more realistic, the challenge for this Foresight is to identify the added value of the ‘city’ as a location, which acts through the many types of infrastructure and support systems, both physical and human.</p>
Purpose / Objectives	<p>The main goal of the foresight should be to develop shared visions and options for the future of a specific network of cities, involving stakeholders from several cities. This should demonstrate how a concrete network of cities can identify win-win situations and to find a balance between competition and cooperation. Such networks of cities could be defined in terms of interactions involved (scientific cooperation, knowledge based services, value chains, innovation processes ...) or in terms of urban infrastructures (e.g. energy, housing, transport, ICT ...), industry, diversity and cultural aspects.</p>
Main Questions	<p>The foresight should help to find appropriate forms of co-opetition (cooperation and competition) between cities, urban regions, cross-border regions in the European wide network of cities for the benefit of urban regions, nation states and the European Project. This includes urban infrastructures (e.g. energy, housing, transport, ICT ...), industry, diversity and cultural aspects.</p>

<p>Impact Factors / Trends /Drivers</p>	<p>Current trends and drivers include:</p> <ul style="list-style-type: none"> • Changing urban hierarchy (world cities, regional cities, secondary cities etc • The shift from regional policy back to urban policy, where cities are seen as the drivers and hubs of regional development. • Increasing globalization and global network effects in all kinds of economic and social systems, particularly in large firms and supply chains. • Effects of economic migration and ethnic diasporas in forming urban sub-groups and globalized communities

Theme 2.2: CONNECTED CITIES	
Theme	Connected urban regions within Europe
Rationale and challenges	<p>The policy response to global climate change is putting increasing pressure on urban regions to improve the mitigation of greenhouse gases related to physical and virtual connectivity in transport, ICT ...</p> <p>One practical response is that networks of cities might 'join forces' to improve connectivity within the network, without focussing only on physical forms of mobility. The call for virtual business, tele-working, video-conferencing etc has been around for 20 years. However experience shows that when sophisticated, intangible issues need to be discussed, face to face meetings are much preferred: and the result of new technology is that many professionals are now fully distributed, working effectively from a laptop in an airport lounge anywhere in the world The implication is that there are opportunities on the demand side: a) within organizations / networks or supply chains, to link and coordinate activities, in order to manage travel demand: and b), within cities, to decide how advanced technology could be more accessible, and how to encourage clusters of firms to make the best use of it.</p>
Purpose / Objectives	<p>The foresight should help to find appropriate forms of connectivity between cities, urban regions, cross-border regions in the European wide network of cities, for the benefit of urban regions, nation states and the European Project. This can include connectivity between cities with respect to mobility (public transport, car sharing models ...), logistics (compatibility of city logistics ...) as well as ICT and other means to increase connectivity, but avoiding greenhouse gas emissions of physical mobility (video conferencing, virtual reality ...)</p> <p>The main objectives could be summarized:</p> <ul style="list-style-type: none"> • Explore emerging technologies for travel substitution • Identify firms, clusters, organizations and other networks who would gain from virtual facilities • Make recommendations for urban policies and market mechanisms to provide facilities and encourage take-up
Specifying Urban Region and systems addressed:	<p>This addresses in the first place, clusters and networks of cities: it also is relevant to the adaptive city, and to urban ecosystems.</p> <p>Although this focuses on the city cluster / network, it is very relevant to national and EU policy, where the rising demand for</p>

	mobility is a growing challenge.
Main Questions	<ul style="list-style-type: none"> • Generally, how can urban regions, nation states and the European Project benefit from connectivity, including all forms of linkages (mobility, logistics, ICT, social and cultural networks ...). • On the demand side, how can firms / organizations collaborate in order to reduce physical travel • On the supply side, how can an infrastructure for advanced communications be supported and financed.
Impact Factors / Trends /Drivers	<ul style="list-style-type: none"> • On the demand side, the restructuring of firms, supply chains and larger corporate structures, has produced a long term business travel demand growth of 3-5% per year. • The first and clearest 'outcome' trend is the growth in air travel across the EU, of approximately 3-5% per year (doubling time of 15-25 years) • Other forms of transport, show relative growth: rail traffic and private car travel each increasing as fast more or less as the infrastructure will support. • However the effect of peak oil may now be here or arriving shortly: meaning that physical travel will start to be constrained by price rather than capacity. • On the travel substitution side, there is the well-known technology trend of doubling of ICT processor speed every 1.5 years: however, how long this can continue is an open question.

Theme 2.3: FINANCING URBAN DEVELOPMENT	
Theme	<ul style="list-style-type: none"> • <i>Linking the corner shop to the global bank</i> • <i>Interaction of global & local finance</i>
Rationale and challenges	<p>This foresight theme has emerged from the challenge thrown by the global financial crisis of 2008-2010, and still continuing in countries such as Greece or Portugal. The core concept is to improve the local resilience to global crises: and also to improve the stability of the global system with a better linkage to local resources.</p> <p>The financial crisis in 2008 is a topic with high impact on the strategic behaviour of a wide range of actors. The consequences have not been addressed in the screened foresights. Nevertheless it is becoming a limiting framework condition in the medium and long run. As an example, the financial crisis and the consequences for public and private investments will have consequences on financing large scale “greening” of infrastructure or housing plans.</p> <p>Given the limits in public budgets combined with high uncertainties regarding climate change, energy availability and prices, or other factors, investment might be postponed or the investments could be reduced to limit financial risk. The long term consequences are not yet understood and adaptive strategies are needed.</p> <p>At the other end of the range there is a growing awareness of the potential of local economies, social enterprises, inter-mediate labour markets, and informal / household activity. These are economic generators or employment capacity building: they are also generators of other forms of wealth and prosperity. Often however there is a mismatch between the local economy, with shortage of capital and market access: and the global finance which is vulnerable to wider pressures. Meanwhile the government underwriting of the banking system has led to massive public deficits, without any improvement in local lending rates</p>
Purpose / Objectives	<p>The objectives can be summarized:</p> <ul style="list-style-type: none"> • Explore the potential for enhancing local economic development, through better linkages and coordination between global finance to local activity, and vice versa. • Review the progress and prospects for ‘integrated local economic development’, including social enterprise, ecological economy, domestic activity, intermediate labour markets etc. • Explore the options for cities and urban governance to

	encourage the improved linkages.
Specifying Urban Region and systems addressed:	The theme is relevant to all levels of governance, i.e. local, urban, regional, national and EU / international.
Main Questions	<p>As cities are increasingly nodes in a global system, the dependency and vulnerability to global capital is increased (both for poor and wealthy cities). There are questions on how to improve resilience to global problems: how to manage external investment, and how to mobilize local resources, both financial and social-ecological. These questions can be summarized:</p> <ul style="list-style-type: none"> • How to improve the stability and resilience of the financial system: where global financial shifts can be balanced by local resources, or vice versa: • How to link the financial system to other sources of wealth and prosperity: household economy, social enterprise, ecological assets etc. • How to improve the links between the global finance and local SMEs and social enterprises who need access to capital • Potential for building up local / urban resources and assets: e.g. time-banks, social exchange markets, barter networks, community banking, micro-finance etc.
Impact Factors / Trends /Drivers	<p>There are many trends and driving forces: some of the most direct include:</p> <ul style="list-style-type: none"> • State and citizen financial exposure to national / international banking • Current rates of lending, finance charges, survival and vulnerability of SMEs and social enterprises. • Growing unemployment / partial / insecure employment, with parallel raise of informal activity and social enterprise. • Increasing awareness of ecological assets and ecosystems services and the local and regional scale.

Proto-Theme 3: Urban Innovation Eco-systems

Transition processes are taking place in many urban systems. Such transitions can range from energy systems, mobility infrastructure, ICT connectivity, housing etc: to more structural aspects such as governance, demographics, lifestyles and cultures. For smooth transitions niches for experimenting are paramount which allow room for success and failure.

Development areas within cities and urban periphery can be seen as such niches as eco-systems / pioneering living labs / innovation hubs. Several demonstration projects are taking place in urban regions with new technological options or recombining existing technologies that in the context of new development areas represent pioneering “living laboratories”. This provides new perspectives for the integration of technology driven demonstration projects into a wider socio-economic context of a city system starting from within the city system.

They can also be understood as breeding places for innovations attracting creative and knowledge workers taking advantage of cultural and professional diversity.

For urban regions, the challenge is how to set up such innovation hubs in a regional and global context from which innovations can diffuse. This network role not only helps to foster transitions within a city system but also to position innovative cities as a network node of international and global relevance in related industries and service sectors.

Opportunities will arise from that. They can be understood as inspiration for entrepreneurial activities with the goal of economic profit from innovation. These are likely to be incremental innovations. However, given the prospect of turbulent times ahead, it might be questioned if incremental innovation can lead to the necessary transitions (e.g. in energy, mobility ...) or if more radical innovation and wider paradigm changes are to be aimed at. Although short term financial profits might be unlikely, and short term rational behaviour minimising risk will hinder radical innovation, benefits might occur as positive externalities.

Opportunities can be seen particularly at the frontier zones: such as, between global and local finance: between market and governance systems: and between the new social technologies and their human users.

The main questions are:

How can such development areas support transition processes from within? How to foster innovation hubs of industries and service sectors by using pioneering living labs, incubators, prototypes, techno-poles, and other innovation approaches.



Theme 3.1: ENERGY TRANSITION LAB	
Theme	<ul style="list-style-type: none"> • <u>energy transition in urban regions</u> • <u>local pioneering living labs for energy transition</u>
Rationale and challenges	<p>The global energy system faces a long-term transition towards a more distributed and sustainable system. Several countries have expressed sympathy with the idea that a more decentralized power grid and intelligent infrastructure “Smart Grids” should be explored. Also other energy related networks of “Smart Cities” such as for heating and cooling, and for public transport are seen as the key to a transition process in the energy system. Today, demonstration projects are being realized in a considerably large number of regions and countries. Particularly cities and networks of cities play an important role in this process.</p> <p>Bringing “Smart Grids” or other visions related to “Smart Cities” one step further, i.e. from the level of demonstration projects to system-wide operation, cannot be achieved without taking into account the governance of the electricity system. To bring technological and system innovation off the ground, large infrastructure investment decisions have to be taken. In the near future a window of opportunity might open and should be used for Smart Grids and other Smart City visions. Policies, standards, and regulations have to be coordinated, and new ways of governance have to be explored as the relations between producers, distributors and consumers get increasingly complex through new technological opportunities and changing framework conditions.</p>
Purpose / Objectives	<p>The new opportunities for transitions in the energy system calls for concerted visions, strategies and actions between the economy, the policy system, civil society, media and science, which however all have their specific rationalities.</p> <p>A foresight on energy transition in urban regions aims at facilitating the transition of energy systems from the demonstration phase to the mainstream of the energy system. From the perspective of transition theory, it is necessary to link actors and processes from the technological niche with the mainstream energy system taking into account changing societal framework conditions, technological possibilities and financial capacities.</p>
Specifying Urban Region and systems addressed:	<p>This addresses in the first place, urban districts and the administrative units at city level. But it also is relevant to the adaptive city and clusters of cities which might see benefits from local experiments and the possibilities to develop an energy system for the whole cluster. It is also interesting for industry as living labs to experiment with new concepts and technologies in cooperation</p>

	with other stakeholders.
Main Questions	<p>The main question is: How can local development areas support transition processes in the energy system from within a city or cluster of cities?</p> <p>Further questions could be related to:</p> <ul style="list-style-type: none"> • identifying pending issues and link communities involved in deployment of Smart Cities and Smart Grids in the context of urban regions, • to validating mechanisms of political governance from involved city regions and countries, and • proposing and initiating test-beds for scaling-up Smart City and Smart Grid concepts to inter-regional and international levels.
Impact Factors / Trends /Drivers	<ul style="list-style-type: none"> • Regional climate change will have strong effects on the distribution of energy required for heating and particularly cooling. Peak loads will probably shift from the cold season to the hot season. • The integration of renewable resources into energy grids will cause changes in the infrastructure and in the managements of grids because of more decentralised supply structures. • Energy availability and expected uncertainties in supply and market mechanisms will require adaptive behaviour to develop resilient energy systems. • Effects of the liberalisation of the energy market will impact the energy transition and energy control bodies have to be integrated into governance processes to allow for experimentation and development of the regulatory regime.

Theme 3.2: SMART CITY GOVERNANCE	
Theme	<ul style="list-style-type: none"> • <u>From smart cities to urban intelligence</u> • <u>The urban learning / thinking re-volution</u>
Rationale and challenges	<p>There are growing challenges such as economic insecurity, fragmented governance, financial deficits, social disorder, and forthcoming climate change. In the face of these and more, cities need to be adaptive, strategic, innovative etc: but the reality is that many forms of governance are slow, inefficient and obsolete.</p> <p>While attention has focused on ICT-based ‘smart’ cities, it is clear to many that this can have only limited effect, if the underlying structures of governance and markets are ‘non-smart’. Governance is concerned mainly with the next election: business is focused on short term profit: civil society is driven by sectional interests. In response there are emerging concepts of a wider ‘urban intelligence’, i.e. capacity for creative innovation, social responsibility and strategic thinking, in every sector of the city.</p> <p>This is likely to involve ICT and particularly social technology: but it also involves looking at markets, finance and supply chains: social networks and community structures. It also raises questions on spatial planning, built environment and housing forms which may encourage or restrict such processes.</p>
Purpose / Objectives	<p>Such a Foresight could range very widely. However the core concepts and objectives can be summarized, as to explore the role and prospects for ‘urban intelligence’:</p> <ul style="list-style-type: none"> • In economic and financial systems, business networks and supply chains: • In social and community systems, social enterprises, NGOs and other civil society groups and networks • In environmental and ecological systems, for resource management, infrastructure development, risk management etc. • Also, to explore the role and prospects for ICT and social technology as a catalyst for the above. • Overall to improve urban governance systems and the role of research in supporting them.
Specifying Urban Region and systems addressed:	<p>This theme is relevant to all levels of governance, i.e. local, urban, regional, national and EU / international.</p>

Main Questions	<p>Some of the most critical questions can be set out:</p> <ul style="list-style-type: none"> • How to improve local economic development and financial systems, to avoid dependency and vulnerability, and increase ‘intelligence’; • How to use the ‘Smart’ city technology focus as an enabler for the wider ‘urban intelligence’; • How to improve urban governance for better strategic thinking, participative democracy, creative innovation, responsive services etc. • Overall, how to make links between these different areas in order to generate synergy, new opportunities and added value for the city as a whole.
Impact Factors / Trends /Drivers	<p>This theme covers many aspects of urban activity: some critical current trends and driving forces can be explored:</p> <ul style="list-style-type: none"> • Economic trends: globalization of finance and access to capital: • Infrastructure trends: increasing responsive capacity (e.g. ‘smart grids’ however there is evidence of • Social / cultural trends: increasing tolerance, diversity and cultural mixing(in most places): however there is evidence of growing insecurity of employment, with alienation and exclusion of some social groups. • Communications trends: the rapid rise of social technologies raises huge questions: will the trends continue? Will the technologies be capture by corporate or statist interests, or stay as open and transparent? • Urban development trends: some urban areas are globalized: some are constructed for machines not humans: and some are enclaves behind walls. There is a resurgence of ‘urbanist’ thinking, but this often struggles against wider pressures. • Governance trends: experiments in decentralized, networked governance: co-production & partnership in public services: ecological direct democracy. Meanwhile there is growing lack of trust in government, and the public finance deficit has closed many types of service.

Annex 3: Overview of screened Foresights: Purpose and Questions

National Foresights with Urban Focus			
	AGORA 2020	RETROFIT - Re-engineering the City 2020-2050	Regional Futures: England's regions in 2030
Time-horizon	2020/ 2030 2050 (15-45 years)	2020, 2050	2030
Regional coverage:	France, Europe	UK; Greater Manchester and Cardiff/South Wales	
Website	http://www.developpement-durable.gouv.fr/Agora-2020-Rapport-final.html	http://www.retrofit2050.org.uk/	http://www.southwest-ra.gov.uk/media/SWRA/RSS%20Documents/Technical%20Documents/Regional_Futures_Report.pdf
Contractor/Sponsor	DRAST, futurRIS, ERA-NET "For Society"	EPSRC funded interdisciplinary project	Government
Duration of activity	2003 - 2005	Start in October 2010. Duration: 42 months.	-2005
Purpose	Build up a clear vision of middle and long term societal issues in the field of transport, housing, town planning to establish priorities and incentives for the next research programs in France. Develop strategic priorities for actions	Deliver a 'step change' in current knowledge and capacity to underpin the transition to urban sustainability.	This study attempts to provide a clearer economic and demographic context for regional planning for the next 25 years. Its purpose is to develop a national perspective on how England's regions (including London) relate to each other and to underlying forces in the economy, and how these relationships have been changing and will change in the future.
Questions	What are the key questions that need to be asked right now?	What are challenging but realistic social and technological options and pathways for the systemic retrofitting of two core UK city regions: Greater Manchester and Cardiff/South Wales?	The UK Government has set the objectives of raising the rate of economic growth in all regions and, in the long term, or reducing the persistent gaps in growth rates between regions. This study attempted to provide a clearer economic and demographic context for regional planning in England for the next 25 years.



LOCAL EXAMPLES			
	plaNYC	UTU35 UUSIMAA 2035 Scenario Project	Georgia Basin Futures project
Time-horizon	2030	2035 (30+ years)	40 years
Regional coverage:	New York; US	Uusimaa (Metropolitan are of Helsinki)	West Coast of Canada, Vancouver area
Website	http://www.nyc.gov/html/planyc2030/html/home/home.shtml	http://www.uudenmaanliitto.fi/files/512/UTUenglanti.pdf	Not now online but some info at www.tellus.org
Contractor/Sponsor	City Mayor of New York, Bloomberg	Regional Authorities	University of Columbia
Duration of activity	2005 - 2007	2003 - 2004	1999-2004
Purpose	Attempt to develop a strategy for managing the New York City's growing needs within a limited amount of land.	The principal task of the UTU35 project was to generate information concerning long-term development views as a basis for decision-making for regional, sub-regional and local actors.	Using scenarios as a means to engage citizens in designing alternative futures for the Georgia Basin and exploring the environmental, social and economic consequences of these alternatives.;
Questions	What kind of city should we become? Question posted to New York for the vision of a "greater, greener New York"	What are the effects and consequences that change in the environment over time for Uusimaa, particular in the fields of business development, employment development, housing, transport, regional structure?	

LOCAL EXAMPLES			
	Imagine Durban	Leeds 2050	Imagine Calgary
Time-horizon	50 years	2050	100 years
Regional coverage:	South-Africa, Durban Region	Leeds & Leeds city-region	Calgary
Website	http://www.imaginedurban.org/	http://www.leeds.gov.uk/Business/Planning/Planning_policy/Leeds_2050_Study.aspx	http://www.imaginecalgary.ca/
Contractor/Sponsor	Canadian International Development Agency	Yorkshire Regional Development Agency	City of Calgary
Duration of activity		2006-7	Started in 2005
Purpose	Process about mobilizing government, non-government, civil society organizations, faith based groups, tertiary institutions, business organizations and ordinary folk to imagine where they want to be in the future.	Explore the future development of the city and how this could take place in line with the principles of sustainable development and of One Planet Living.	Process of shaping their city's future. Over 18,000 Calgarians added their voice to imagine CALGARY, making this the largest community visioning process of its kind anywhere in the world
Questions	The Imagine Durban process began by asking some key questions of people from all walks of life about what they do and don't like about their neighbourhoods and the city.	How to achieve the consumption -based footprint targets of 80% reduction by 2050: what is the role of local government & urban policy?	Five appreciative inquiry questions soliciting the values of Calgarians. These questions were <ul style="list-style-type: none"> • What do you value about Calgary? • What is it like for you to live here? • What changes would you most like to see? • What are your hopes and dreams for the next 100 years? • How can you help make this happen?

GLOBAL INTER-GOVERNMENTAL INITIATIVES			
	World Urbanization Prospects, the 2009 Revision	Future of cities	Ecological Cities as Economic Cities
Time-horizon	2050	2050	
Regional coverage:	global	global	global
Website	http://esa.un.org/unpd/wup/index.htm	http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=1162	www.worldbank.org/eco2
Contractor/Sponsor	UN DESA	UN Habitat	World Bank
Duration of activity	2009-10	2003	2010 - -
Purpose	Between 2009 and 2050, the world population is expected to increase by 2.3 billion, passing from 6.8 billion to 9.1 billion (United Nations, 2009 a). At the same time, the population living in urban areas is projected to gain 2.9 billion, passing from 3.4 billion in 2009 to 6.3 billion 2050.	The Future of Cities was one of the five key parallel events held during the Nineteenth Session of the UN-HABITAT Governing Council 2003 in Nairobi, Kenya.	Eco2 Cities is a new initiative launched by the World Bank, as an integral part of the World Bank Urban and Local Government Strategy, to help cities in developing countries achieve greater ecological and economic sustainability.
Questions	what is the urban-rural balance projection? What is the rate of urbanization?	The objective of the parallel event was to explore and discuss how cities are likely to develop in the 21st century, in terms of their form and function and taking into consideration, past current and anticipated future trends.	How can cities continue to harness the opportunities for economic growth and poverty reduction offered by urbanization, while also mitigating its negative impacts? How can cities do so given the speed and the scale of urbanization, given their own capacity constraints? How can ecological and economic considerations be dovetailed, so that they produce cumulative and lasting advantages for cities? How do we go from 'Eco vs. Eco' to 'Eco2 cities'?

GLOBAL INTER-GOVERNMENTAL INITIATIVES		
	Urban & Local Government Strategy	APEC Megacities 2030
Time-horizon	not made specific, but long term infrastructure investments are touched	up to - 2030 (30 years)
Regional coverage:	global	Asia
Website	http://www.ucl.ac.uk/dpu-projects/drivers_urb_change/urb_governance/pdf_capa_building/WorldBank_urban_and_local_gov_strategy.pdf	http://164.115.5.161/apec/publications/16.pdf
Contractor/Sponsor	World Bank	APEC, Asia-Pacific Economic Co-operation
Duration of activity	2009	1998 - 2000
Purpose	Strategy for World Bank financing of City Systems in less developed regions	Improving the quality and effectiveness of technology-related planning Developing a technology foresight research and application capability available to APEC member economies and international agencies
Questions	Management, Financing and Investing and Policy in cities build the relevant areas of attention in city systems	What are technological opportunities and key policy issues for APEC Megacities?



	GLOBAL - INTEREST GROUP		GLOBAL RESEARCH	Global Challenges
	19.20.21 Supercities study	The City in 2050 Initiative	science plan :urbanization and global environmental change	NIC-Global Scenarios to 2025
Time-horizon	2100	2050	not specified	2009 - 2025
Regional coverage:	Megacities around the world	global with USA & developed country focus	global	US and global
Website	http://www.192021.org/	http://www.uli.org/ResearchAndPublications/Initiatives/City2050.aspx	http://www.ugec.org/files/UrbanizationSciencePlan.pdf	http://www.dni.gov/nic/NIC_2025_global_scenarios.html
Contractor/Sponsor	Radical Media	Urban Land Institute	International Human Dimensions Programme on Global Environmental Change (SC-IHDP)	National Intelligence Council
Duration of activity	2009 - -	2006 --	2003 - 2006	-2008
Purpose	The mission of 19.20.21 is a multi-year, multimedia initiative to collect, organize and package information on the prospects for the Supercities study: 19 cities with 20+ million in the 21st century	professional / industry think-tank process Impact of capital markets, climate change, sustainability, transportation and infrastructure needs, demographic trends, housing, retail, and technology.	This Science Plan is the product of two years of a bottom-up, consultative process, which started in 2002. In March 2003 a "scoping report" was presented to the SC-IHDP. Roberto Sánchez-Rodríguez led the effort of developing a Science Plan for this new core project together with an international core group of scholars.	Develop global scenarios up to 2025 for the US-National Intelligence Council.
Questions	What are the trends? Driving forces and pressures? What kind of questions are relevant in each super-city?	Questions the book addresses include: How can cities and communities be shaped to meet present needs while empowering future generations to meet theirs? What must we do now to create value in the City of 2050? How can today's investments achieve both attractive returns and long-term outcomes?	What are the key research areas & how best to implement them?	How can the world attain a high level of sustainable economic growth given the rapidly changing geopolitical landscape of the early 21st century? What will the balance of power look like in 2025 and to what degree might collaborative policies and frameworks shape the global context?

EU RESEARCH PROJECTS			
	SUME - Sustainable Urban Metabolism For Europe	PLUREL - Peri-urban Land Use Relationships - Strategies and Sustainability Assessment ; Scenario Framework WP 1.3.2Tools for Urban-Rural Linkages	ESPON - Spatial Scenarios and Orientations in relation to the ESDP and Cohesion Policy
Time-horizon	2050	2025, 2050	2030
Regional coverage:	Vienna, Munich, Porto, Athens, Newcastle, Stockholm	Manchester, Montpellier, Den Haag, Leipzig, Warsaw, Koper, Hangzou (CN)	Europe
Website	www.sume.at	www.plurel.net	http://www.espon.eu/main/Menu_Projects/Menu_ESPON2006Projects/Menu_CoordinatingCrossThe_maticProjects/scenarios.html
Contractor/Sponsor	FP7	FP6	DG Regio / Interreg
Duration of activity	November 2008 - Oktober 2011	2007 - 2010	-2006
Purpose	Find a link between the urban metabolism approach to urban spatial development concepts to foster a more sustainable development path of urban areas in the future.	In Work Package: Scenario Framework WP 1.3.2 Tools for Urban-Rural, the aim was to develop possible and plausible scenarios ('shocks' - rapid an important changes in particular sectors or themes) for PLUREL, focusing on driving forces and the key variables for the modeling studies.	Develop spatial scenarios and orientations in relation to the ESDP - European Spatial Development Perspective from 1999 and the European Cohesion Policy
Questions	How can we better understand the interrelation between urban development and urban metabolism in the sense of physical interaction with the environment is less understood than conventional drivers?	“Are urban areas changing and transforming into a completely new type of human settlement?”: “Are rural areas obsolete, or do they have a new kind of role in an urbanized society?”	“What are the potential milestones or events that could particularly affect us?” “What should we do in the next five years to help prepare for, or shape, the turbulent times ahead?”

National research programmes		
	Oxford Programme for the Future of Cities : The flexible city: facing the challenges of the next 50 years and beyond	City 2030 – Shaping the City of the Future
Time-horizon	50 years	2030 (-30 years)
Regional coverage:	Not defined	Germany
Website	http://www.futureofcities.ox.ac.uk/	EFMN brief 106
Contractor/Sponsor	The programme is led by the Institute for Science, Innovation and Society at Oxford University's Saïd Business School and guided by a Steering Committee: funded by the Centre for Studies in Property Valuation and Management Trust with matched funding from Dr. James Martin.	Federal Ministry of Education and Research, 15 Mio. EUR Research Programme
Duration of activity	2009 - -	2000-2005
Purpose	Taking an approach that is both interdisciplinary and rigorous, the programme will use the Flexible City as a jumping-off point to investigate the ways in which cities can be made more flexible to meet the challenges of the next fifty years. In particular, the programme will look at the implications this has for decision-making in boardrooms, communities, and city and national governments, in the next 5-10 years and beyond.	Initiate a discourse in the cities on guiding principles, scenarios and models.
Questions	What changes and challenges will cities face over the next fifty years? What are the implications for decisions made by the private sector, governments and civil society?	What are new principles and models for their long-term development of German cities? Cities were asked to envisage possible or likely future scenarios and to think about the goals they wanted to accomplish and criteria to evaluate their progress.



NATIONAL LEVEL EXAMPLES			
	The Netherlands of 2040	America 2050	Australia 2050
Time-horizon	2040 (30 years)	2050	2050
Regional coverage:	Netherlands, Europe	Megaregions: Arizona Sun Corridor, Cascadia, Florida, Front Range, Great Lakes, Gulf Coast, Northeast, Northern California, Piedmont Atlantic, Southern California, Texas Triangle	Australia, with focus on capital cities, Northern and Remote Australia and East Seaboard Basin
Website	http://www.nl2040.nl/index-en.htm	http://www.america2050.org/	http://www.australia2050.com/
Contractor/Sponsor	n.a.	Several large US based Foundations	n.a.
Duration of activity	up to 2010	2005	Preparation started in 2008, official launch in 2010. No end time announced.
Purpose	Develop 4 scenarios to increase the understanding of the long-term economic future of the Netherlands in which “People and cities are at the foundations of the scenarios”.	America 2050 is a national initiative to meet the infrastructure, economic development and environmental challenges of the nation as we prepare to add about 130 million additional Americans by the year 2050.	The role of The Australia 2050 Project is to facilitate discussion around the social, economic and environmental challenges facing Australia to 2050.
Questions	“How will we earn our money in 2040?” “Who is producing, and where does this take place?” “What will be the future of Dutch cities as places of production?”	How can megaregions develop into sustainable regions, competitive on the global level and with good infrastructure supporting the regional economic, social and environmentally sound development	Australia 2050 builds on a book: "Australia 2050 Big Australia?", which describes the past of Australia and the current social, economic and environmental positions, it describes the big topics in the discussions about the future of Australia and it offers potential solutions for collaborative nation, region and city building. The book functions as the background paper for further online discussions about the future of Australia and potential alternative solutions for the main societal challenges.

NATIONAL LEVEL EXAMPLES		
	East African Scenarios Programme	Integrated Community Sustainability
Time-horizon	2040	2100
Regional coverage:	East-Africa	various urban clusters in Canada
Website	http://www.sidint.net/themes-programmes/east-african-scenarios-programme/	http://www.cscd.gov.bc.ca/lgd/intergov_relations/library/ICSP_Background.pdf
Contractor/Sponsor	Governments of the Kingdom of the Netherlands (Ministry of Foreign Affairs) and the Republic of Italy (Ministero degli Affari Esteri/DGCS). Project has been developed and coordinated by the Society for International Development	Ministry of Community Services
Duration of activity	1998 start of East Africa Futures Programme and in 2005 start of East Farica Scenarios Programme	started 1998, in progress
Purpose	Aims to generate and sustain dialogue amongst key stakeholders on alternative possible futures that the East African region might have to confront in the coming decades	Provincial initiative which originated from the 2005 federal/provincial/UBCM Federal Gas Tax Agreement (GTA). It ties in very closely with provincial interests to address climate change and encourage the development of healthier, less costly and more sustainable communities.
Questions	<ul style="list-style-type: none"> • What is the nature of the systemic pressures facing East Africa? • Are East Africa's national and regional institutions up to the task of addressing these powerful pressures? • What are the implications of the systemic pressure-institution quality nexus for the future of the region? • What are the options that policy leaders and political elites can exercise given the current circumstances? • Do we need a new set of eyes through which to look at our societies, the way they are changing and how we need to respond to their needs? • What do we want? What will we become? 	How to link short term policy with long tyerm aspirations?



FOCUSED NATIONAL FORESIGHT INITIATIVES			
	Land Use Futures	Powering Our Lives: Sustainable Energy Management and the Built Environment	Foresight project Flood and Coastal Defence
Time-horizon	2050	2050	2100
Regional coverage:	UK	UK	UK
Website	http://www.bis.gov.uk/foresight/our-work/projects/published-projects/land-use-futures	http://www.bis.gov.uk/foresight/our-work/projects/published-projects/sustainable-energy-management-and-the-built-environment	http://www.bis.gov.uk/foresight/our-work/projects/published-projects/flood-and-coastal-defence
Contractor/Sponsor	UK Foresight: sponsored by Dept of Environment / Food: Dept of Communities & Local Government	UK Foresight: sponsored by Dept of Environment / Food: Dept of Communities & Local Government	UK Foresight: sponsored by Dept of Environment / Food: Dept of Communities & Local Government
Duration of activity	2006-2009	2005-2008	2001-2004
Purpose	Foresight undertook a major project on the future of land use in the UK.	Explore how the UK built environment could evolve to help manage the transition over the next five decades to secure, sustainable, low carbon energy systems that meet the needs of society, the requirements of the economy, and the expectations of individuals.	The Foresight project Flooding and Coastal Defence produced a challenging and long-term (30 - 100 years) vision for the future of flood and coastal defence in the whole of the UK that takes account of the many uncertainties, is robust, and can be used as a basis to inform policy and its delivery. The report launched in April 2004.
Questions	What land use challenges could the UK face over the next 50 years? Will existing structures and mechanisms help us to meet those challenges? What opportunities are there to use and manage land differently now so that UK society continues to enjoy a good quality of life in the future?	How can we deliver a sustainable built environment which sources, manages and delivers energy, minimising carbon emissions and maximising resource efficiency, while delivering the level of service (quality, comfort, reliability, and security) required to maintain economic growth and quality of life? How do we develop the UK built environment over the next 5 decades to meet people's energy (within the EU and wider international context)? What are the socio-economic technological, regulatory and infrastructure requirements on Sustainable Energy and the Built Environment?	<ol style="list-style-type: none"> 1. How might the risks of flooding and coastal erosion change in the UK over the next 100 years? 2. What are the best options for Government and the private sector for responding to the future challenges?



SECTORAL FORESIGHTS 30+			
	Shell energy scenarios to 2050	Deciding the Future: Energy Policy Scenarios to 2050	Energy Transition - The next 50 years
Time-horizon	2055	2050	
Regional coverage:		global	Netherlands and Europe
Website	http://www-static.shell.com/static/public/downloads/brochures/corporate_pkg/scenarios/shell_energy_scenarios_2050.pdf	http://www.worldenergy.org/documents/scenarios_study_online.pdf	http://www.ecn.nl/docs/library/report/2005/c05057.pdf
Contractor/Sponsor	Shell	WEC	Ministry of Economic Affairs (EZ)
Duration of activity		2005-2007	-2005
Purpose	Help think about the future of energy and to test Shell's strategy against a range of possible developments over the long-term.	Update of the WEC Energy Policy Scenarios	Find portfolios of technology for an Energy Transition in The Netherlands
Questions	How can we prepare for, or even shape, the dramatic developments in the global energy system that will emerge in the coming years?	What are possible energy futures and what are the challenges in these energy futures? What is the role of policy for WEC millennium goals (i.e. accessibility-availability-acceptability)	What are robust portfolios of technology for the next 50 years?

SECTORAL FORESIGHTS 30+			
	Energy Technology Perspectives 2010	Intelligent Infrastructure Futures 2055	The UK Housing Stock 2005 to 2050
Time-horizon	2050	2055	2050 (45 years)
Regional coverage:	global	UK	UK
Website	http://www.iea.org/techno/etp/index.asp	http://bis.ecgroup.net/Publications/Foresight/IntelligentInfrastructureSystems/06521.aspx	http://www.eci.ox.ac.uk/research/energy/downloads/bmt-ukdcm2report.pdf
Contractor/Sponsor	OECD / IEA	OST	EPSRC and Carbon Trust
Duration of activity	2010		2005
Purpose	Update of Scenarios and Strategies for OECD	Examine the challenges and opportunities for the UK in bringing 'intelligence' to its infrastructure – the physical networks that deliver such services as transport, telecommunications, water and energy. In particular, the project explored how, over the next 50 years, we can apply science and technology to the design and implementation of intelligent infrastructure for robust, sustainable and safe transport, and its alternatives.	Develop three main scenarios for the UK housing stock for comparison.
Questions	Is the postulated fundamental transformation happening? What are the key technologies that can play a role? What are the costs and benefits? What policies do we need?	How can we apply science and technology to the design and implementation of intelligent infrastructure to robust, sustainable and safe transport and its alternatives?	Scenario A: What is a plausible scenario to illustrate what would happen if change was incremental? Scenario B: How could the residential sector achieve the Government's target of a 60% reduction in carbon emissions in 2050? Scenario C: What are the options for a greater reduction in carbon emissions below 60% through further demolition and new build, higher uptake of renewable energy resources and energy efficiency measures, more fuel switching?



MIGRATION	
	Migration: One of the Most Important Challenges for Europe
Time-horizon	
Regional coverage:	Global
Website	EFMN brief 130
Contractor/Sponsor	FP7
Duration of activity	2008
Purpose	Meta-analysis of migration aspects in 160 foresights
Questions	<p>What are major social, technological, economic, environmental and political trends and rationales for migration?</p> <p>What are strengths, weaknesses, opportunities and threats of migratory processes?</p>



E.U. ROADMAPS		
	Roadmap to a Single European Transport Area	Roadmap towards a 2050 low-carbon economy
Time-horizon	2050	2050
Regional coverage:	EU-27	EU-27
Website	http://ec.europa.eu/transport/strategies/2011_white_paper_en.htm	http://ec.europa.eu/clima/policies/roadmap/index_en.htm
Contractor/Sponsor	European Commission	European Commission
Duration of activity	2009-11	2009-11
Purpose	The European Commission adopted a roadmap of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will dramatically reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050.	With its "Roadmap for moving to a competitive low-carbon economy in 2050 [63 KB] " the European Commission is looking beyond these 2020 objectives and setting out a plan to meet the long-term target of reducing domestic emissions by 80 to 95% by mid-century as agreed by European Heads of State and governments. It shows how the sectors responsible for Europe's emissions - power generation, industry, transport, buildings and construction, as well as agriculture - can make the transition to a low-carbon economy over the coming decades.
Questions	By 2050, key goals will include: how to achieve: No more conventionally-fuelled cars in cities: 40% use of sustainable low carbon fuels in aviation; at least 40% cut in shipping emissions: A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport: 60% cut in transport emissions by the middle of the century.	If the EU makes the transition to a low-carbon society by 2050 we will live and work in low-energy and low-emission buildings, with intelligent heating and cooling systems. We will drive electric and hybrid cars and live in cleaner cities with less air pollution and better public transport. The transition would give Europe's economy a boost thanks to increased investment in clean technologies and clean energy. Europe could cut most of its emissions and reduce its use of key resources like oil and gas, raw materials, land and water.

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