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Draft Background Paper

Screening Urban Foresights and Studies supporting Forward Looking Activities

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

Input to the EFP Policy Workshop on
"**Screening Urban Foresight**"

(28.04.2011, Brussels)

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Screening Urban Foresights and Studies supporting Forward Looking Activities

1. Goals & desired results of the Policy Workshop

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" (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 will be an important part of the pre-foresight phase for Urban Europe foresight activities. The primary aims of the pre-foresight phase are 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

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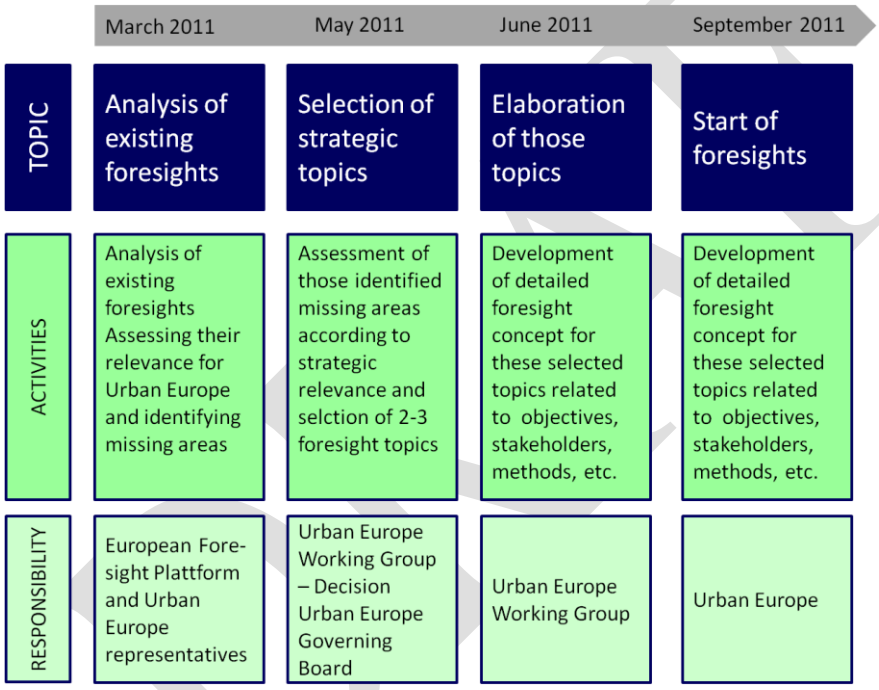
- providing substantial **input for long-term research agendas**.

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 Forsighs 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. 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

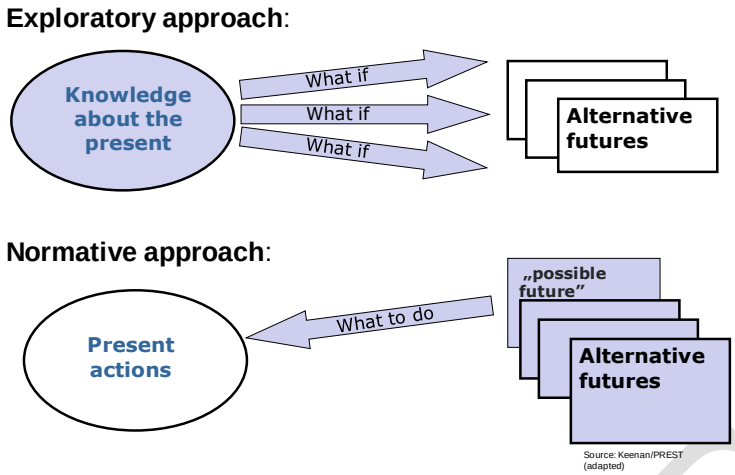
2. Brief introduction to Foresight

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.

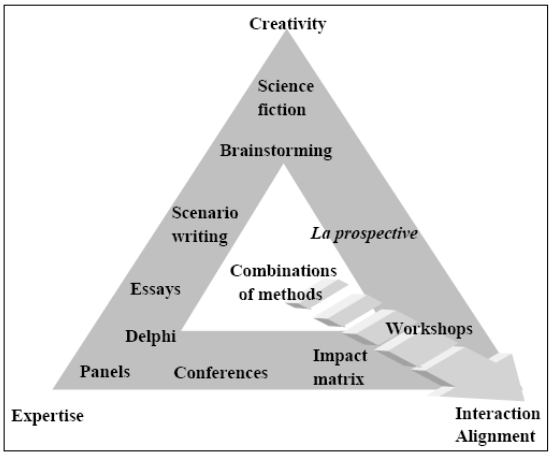
Figure 2: Basic elements of foresight



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 and 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

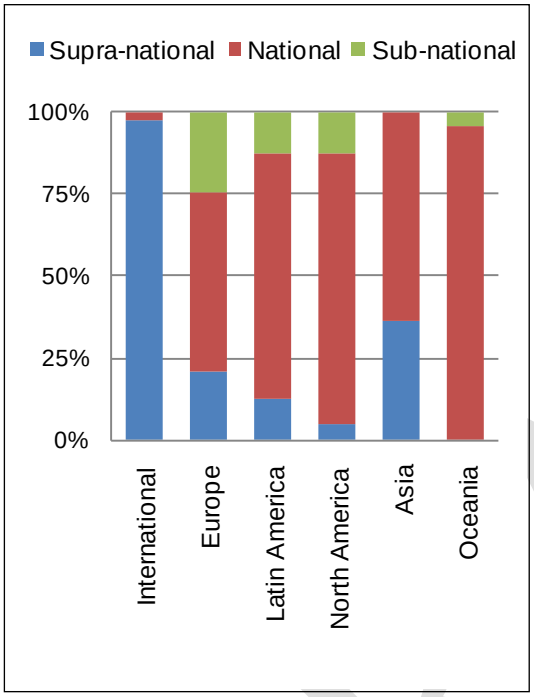
Before going into details of the selected foresights, the EFMN mapping report 2009 allows us to give an overview on the scope of a wide range of foresight activities.
It has to be taken into account that in this dataset mapping results might show a bias due to respect to language problems, low or only 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.

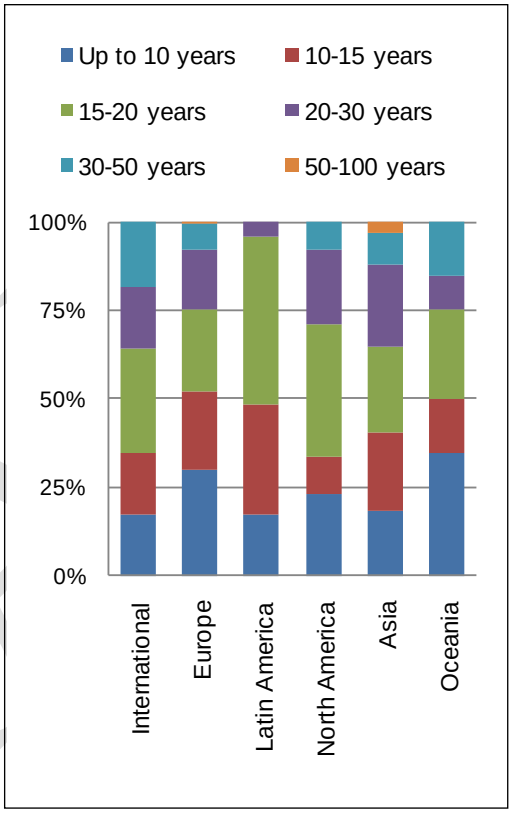
Figure 6 shows an overview of objectives that are most frequently addressed by the mapped foresights. Supporting policy and strategy development – as a main goal to be achieved with UE Foresight activities – is an objective in two thirds of foresights, and priority setting for S&T shall be achieved by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



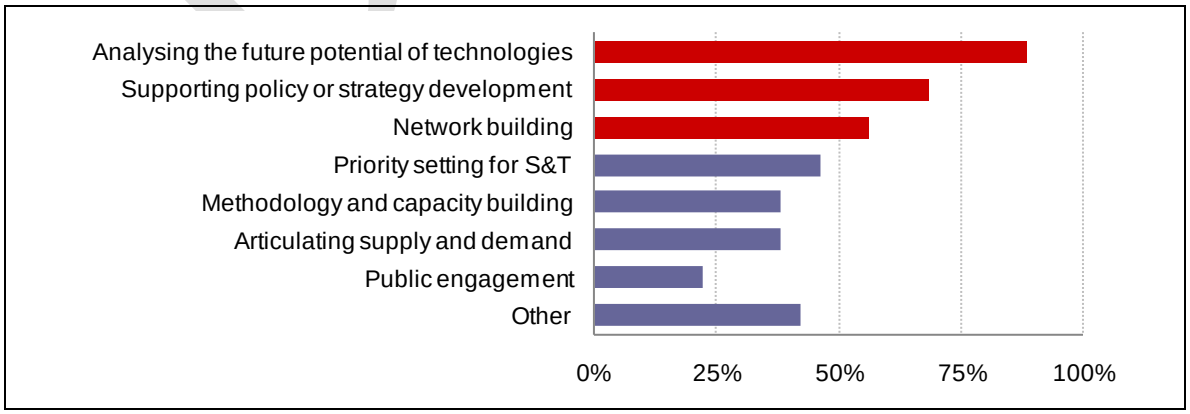
Source: EFMN mapping report (Popper 2009)

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 the purpose of the 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)

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- Develop possible and plausible scenarios ('shocks' - rapid an 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 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 (see Slide 2)

Slide 1: Grand Challenges for European cities

Global Grand Challenges

- Growing cities
- Climate Change Mitigation
- Calamities (heat waves, flooding, …)
- Resource scarcity (energy, water)
- Globalisation
- Demographic Change
- Migration
- Safety & Security

Slide 2: Challenges for fast growing cities in other world regions

Challenges in other world regions

- Fast growing cities & population concentration
- City Management (water, energy, waste, infrastructure maintenance…)
- Resource scarcity (food, water, energy,)
- Mortality & Fertility
- Calamities (heat waves, flooding, …)
- Globalisation
- Migration
- Fundamentalism

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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 might help to identify other impact factors that are not yet listed and to rank their importance for future Urban Europe Foresight activities.

- **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 & Social Ecology**
  - 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), 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:

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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.

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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, aerotropolis 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.

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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.

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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.

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- 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.

Further development can take these typologies and parallel track models, and map them onto the thematic areas and city-images as identifies in the Scoping Report.

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6. Annex: Overview of screened Foresights: Purpose and Questions

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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 attemted 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 • 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 infrsastucture 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 develped 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/Inititatives/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, Warzaw, Koper, Hangzou (CN)	Europe
Website	www.sume.at	www.plurel.net	http://www.espon.eu/main/Menu_Projects/Menu_ESPON2006Projects/Menu_CoordinatingCrossThematicProjects/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 Rage, Great Lakes, Gulf Coast, Northeast, Northern California, Piedmont Atlantic, Southern California, Texas Triangle	Australia, with focus on capital cities, Norther and Remote Australia and East Seabord 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_Backgrounder.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	• 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?	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	What are major social, technological, economic, environmental and political trends and rationales for migration? What are strengths, weaknesses, opportunities and threats of migratory processes?

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.