

From Urban Foresight to Urban Futures? Potentials and Limitations of Forward Looking Activities for Integrated Urban Development

Christian Hartmann

(Dr. Christian Hartmann, JOANNEUM RESEARCH, POLICIES – Centre for Economic and Innovation Research, Elisabethstr. 20, 8010 Graz, Austria, christian.hartmann@joanneum.at)

1 ABSTRACT

While foresight deserved in the last two decades strong attention especially in the domain of Science and Technology Policy both on European, national, and regional level, only few recent examples of such projects addressing the future development of cities can be spotted. Since new initiatives such as the Joint Programming Initiative ‘Urban Europe’ put strong emphasis on foresight on urban scale, the paper aims to shed light on this methodological complex.

After a brief theoretical introduction on generic concepts, methods, and approaches to foresights, the specificities for such undertakings in the framework of cities and urban development will be presented. This will be done in drawing from recent case study examples in European cities like Madrid and Linz. First different fields of application and objectives will be explored, second applied methods, tools and outcomes will be discussed. Building on these presented concepts and instruments a structured discussion of future application areas, potentials, and limitations of urban foresights for integrated urban development will be presented.

2 WHAT IS FORESIGHT?

2.1 Defining foresight

Albeit Foresight gained particular popularity both among practitioners of future studies and academicians in the last two decades no standard definition has been established so far. Textbooks and manuals very often refer to two definitions of foresight (UNIDO 2005, p. 8). The most-often quoted one stems from Ben Martin (1995) at SPRU, who describes research foresight as “the process involved in systematically attempting to look into the longer-term future of science, technology, the economy and society with the aim of identifying the areas of strategic research and the emerging generic technologies likely to yield the greatest economic and social benefits”. Similarly, Luke Georghiou (1996) at PREST describes technology foresight as “a systematic means of assessing those scientific and technological developments which could have a strong impact on industrial competitiveness, wealth creation and quality of life.” A closely related definition has been established by the FOREN Network: “Foresight is a systematic, participatory, future intelligence gathering and medium-to-long term vision building process aimed at present-day decisions and mobilising joint actions” (FOREN 2001, p. 3).

Foresight is often confused with other future-oriented activities, such as forecasting, futures studies, and strategic planning. Foresight should not be confused with forecasting, which tends to be more fixed in its assumptions on how the future will unfold. Indeed, forecasters aspire for precision in their attempts to predict how the world might look at some point in the future. By contrast, foresight does not seek to predict: instead, it is a process that seeks to create shared visions of the future, visions that stakeholders are willing to endorse by the actions they choose to take today. In this way, foresight is not concerned with predicting the future; rather, it is concerned with creating it.

2.2 A brief history of Foresight

The history of foresight is closely interlarded with that of future studies. In the late 1950s a methodological predecessor of foresight first came to prominence in the United States defence sector. Technology forecasting and long range planning was developed at that time by consultants such as the RAND Corporation. The latter were responsible for developing some of the principal tools of technology forecasting, such as the Delphi questionnaire survey and scenario analysis (Helmer 1967). Large forecasting exercises were carried out during the 1960s by the United States Navy and the United States Air Force. In parallel comparable approaches and concepts were developed in Europe (de Jouvenel 1967, Jantsch 1967, Flechtheim 1971). However, the next developments, and the emergence of what we now term “foresight”, took place in Japan. In 1970, the Science and Technology Agency (STA) undertook its first 30-year forecast of the future of S&T. The aim was to construct a holistic overview encompassing all S&T, thus providing

decision makers in both public and private sectors with the background intelligence on long-term trends needed for broad direction-setting. In the early 1980s there were several foresight initiatives in France. Later that decade, countries such as Australia, Canada and Sweden also began to experiment with technology foresight. However, prior to 1990, there was comparatively little technology foresight in Germany, the United Kingdom and the United States. Around 1990, the situation began to change with Australia, France, Germany, the Netherlands, the United Kingdom, the United States and various other countries launching major foresight exercises.

It could be argued that foresight has evolved until present over the period through three generations (Georghiou 2003). First generation activity was concerned with technological forecasting by experts, second generation bringing in industry and the market, and third generation foresight adding a social and user-oriented perspective. It should be stressed that these generations are ideal types and that an individual foresight activity may exhibit elements of two or even three generations.

2.3 Functions, Methods and Tools of Foresight

2.3.1 Functions

Foresight, forecasting or other future approaches are used as a part of the vision and strategy development for a long time (Mintzberg et al. 1998). They are used as a tool to systematically develop or adjust strategic plans. Looking at future developments these strategies can be adjusted to future characteristics and their contribution roughly is fourfold (EFMN 2009):

- **Support decision-making:** Providing an more quantitative information base as input for strategic decisions for investments or actions. Also a more process oriented approach can support the creation of commitment to a decision.
- **Ideation:** Inspire to new ideas, opportunities and providing information on possible new markets, policy measures, or other activities.
- **Increase of anticipatory intelligence:** Providing information on future developments, possible actions can be reflected against to increase the insight of their future context.
- **Create networks and mobilize stakeholders:** Creating a mutual mindset between possible partners around specific subjects, or even joint ventures.

2.3.2 Approaches and Methods

There are many tools, methods, approaches, activities used and organized in future studies. Figure 1 provides an overview of such approaches and methods on the one hand with respect to the time horizon covered and on the other and hand concerning their focus of analysis (i.e. technology or non technological driving forces).



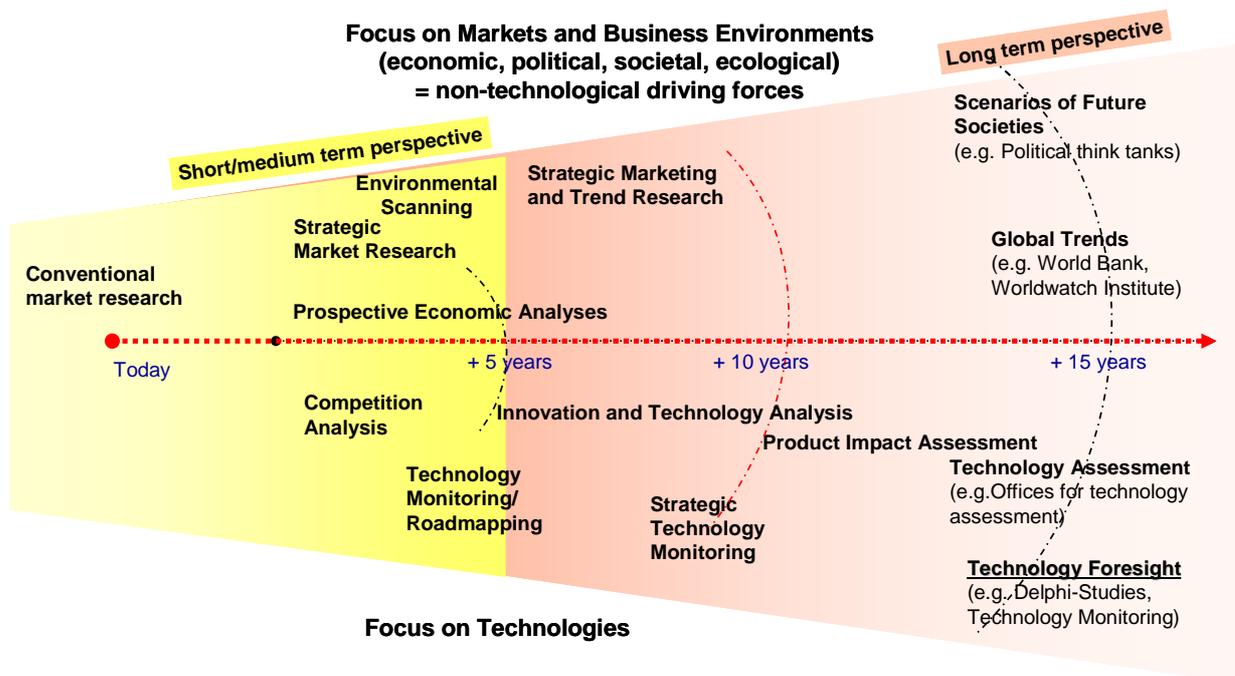


Fig. 1: Foresight Approaches and methods, UNIDO 2006, adoptions JR POLICIES.

Basically, four different categories can be distinguished between:

1. Generic approaches

In future studies, many approaches are used that not differ from other policy oriented research activities. These approaches can be seen as the building blocks of the methods. Examples are interviews, workshops, surveys.

2. Foresight tools

These software or other formalized approaches, use formalized methods that are translated into highly structured tools that can be used to perform foresight and forecasting activities.

3. Foresight approaches

These more integrative approaches aim at the organizing the discussions on the future. They include several ways and can use the generic approaches and tools. Usually a foresight will include a combination of approaches to achieve the objectives.

4. Forecasting approaches

These more quantitative approaches often use modelling and other highly quantitative methods to create more predictive information about future developments.

3 URBAN FORESIGHT – APPROACHES, FUNCTIONS AND METHODS

3.1 Approaches

3.1.1 Urban Foresight as Technology Foresight with impact on urban spaces

Urban foresight can be regarded from a first perspective as technology foresight in conjunction with issues of urban development. Thus no specific territorial focus is set, instead generic issues with relevance for urban development are dealt with. The field of issues is rather wide and reaches from intelligent infrastructures (Office of Science and Technology 2006) or ambient assisted living (Institute for Prospective Technological Studies 2003), to such complex themes such as transport, mobility, housing, construction, urbanism and risks (Ministère de l'Écologie, du Développement et de l'Aménagement durables 2008).

3.1.2 Urban Foresight as Territorial Foresight

As second perspective on urban foresight is a territorial one. Focussing specifically on the urban and regional planning field, we can define territorial foresight as a systematic attempt at long-term observation of the future of science, technology, the economy and society in order to identify the emerging trends that can be expected to produce the greatest changes in the city and the territory (Fernández Güell, 2006). Territorial

foresight thus involves the implementation of the general principles of anticipation, participation, networking and visions at a small geographic scale in which proximity factors are decisive and specific issues of urban policy and development are explicitly dealt with (Bundesministerium für Bildung und Forschung 2003, Fernández Güell, 2010).

3.1.3 Methods and tools

In the future studies literature do exist several taxonomies of tools and methods for foresight (Gordon 1992, May 1996, Miles and Keenan 2003). A rather pragmatic classification distinguishes between quantitative and qualitative methods (UNIDO 2005, Fernandez Güell 2010).

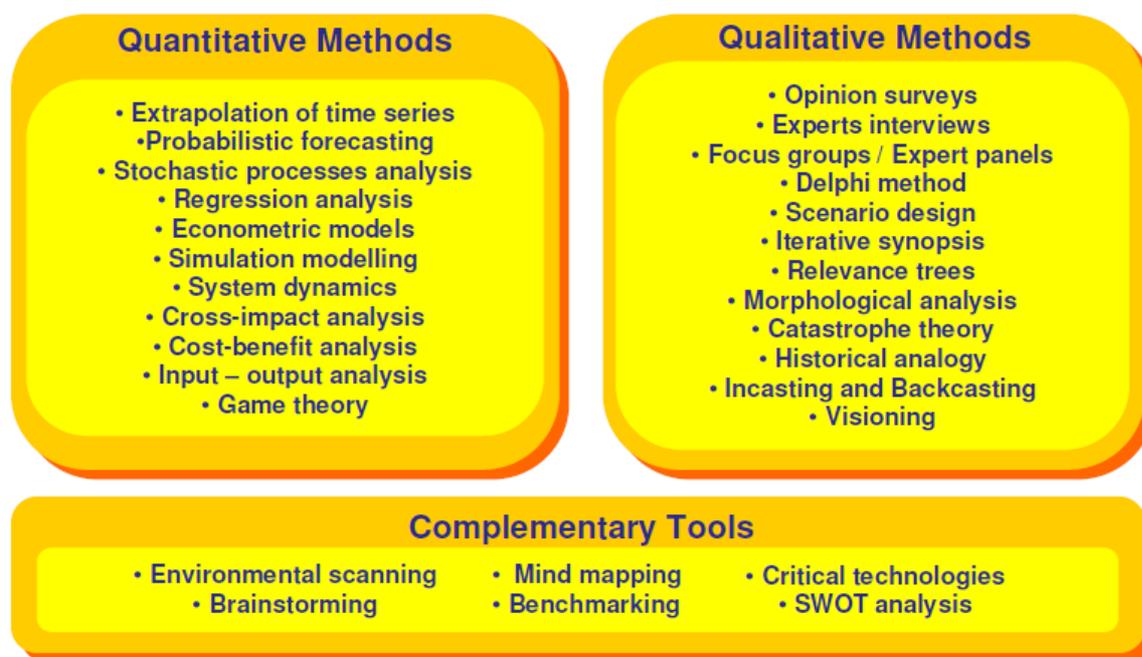


Fig. 2: Tools and methods for urban foresight, Fernandez Güell 2010

Quantitative methods

This group corresponds to methods which carry out future predictions based on mathematical and statistical data treatment. These methods require numerical data about past and present situations, and use highly complex or simple algorithms (Fernandez Güell 2010). These have considerable advantages (e.g. ability to examine rates and scales of change). They also have notable disadvantages (limited grasp of many important social and political variables, dangers of spurious precision, problems of communicating with less numerate audiences, etc.) (UNIDO 2005). Quantitative methods are particularly effective when there is continuity between past, present and future situations, when information is available about past and present conditions, and when short and medium-term projections are required (Fernandez Güell 2010).

Qualitative methods

Under these methods, future predictions are based on intuitions and opinions of experts who possess reliable information and expertise about a specific issue. Subjectivity is their main value. (Fernandez Güell 2010). Methods for working systematically with qualitative data are becoming more widely available with the development of Information Technology—tools for “mind mapping” and “conversation analysis”, etc.—which can also be helpful devices for facilitating meetings and workshops (UNIDO 2005). Qualitative methods are particularly appropriate when there are no past or present data, when structural changes are taking place and historical series are no longer valid, when there is great uncertainty, and when long-term predictions are required (Fernandez Güell 2010).



4 URBAN FORESIGHT - CASE EXAMPLES

4.1 Madrid 2015

4.1.1 Outline

Madrid 2015 is an initiative promoted by the Regional Directorate of Economy and Innovation and carried out by this Directorate and the University Antonio Nebrija with the support from other Universities and Research Centres. This exercise, carried out during 2004, analyses the strengths and weaknesses of the region and initiates a collective thinking process that disentangles the key factors that influence the competitiveness of the region. The final purpose of this foresight project is to explore the possibilities for sustainable economic growth that the region of Madrid has, in order to anticipate possible futures and design long-term policies (Fontanela et al. 2008).

4.1.2 Approach and methods used

Madrid 2015 applied a normative foresight approach: The main objective of this foresight exercise was to shape the paths that the region needs to follow in order to reach an optimistic and desired future in 2015. This desired future, as well as other plausible alternatives, have been illustrated in the form of Scenarios. The Scenarios were built on the analysis of the current situation of the region and did conclude with the elaboration of future strategies (Fontanela et al. 2008).

The foresight process was led by the Regional Government of Madrid and the University Antonio Nebrija, with the collaboration of other Universities and Research Centres. The stakeholders involved in the process were grouped in three boards: an International Advisory Board, formed by international experts in foresight; a Foresight Board, actively involved in the foresight process; and a Consultive Board that included representatives from different areas of government - industry, education, innovation, economy and transport. Additionally, an External Expert Committee gave input at several stages of the project (Fontanela et al. 2008).

The development of Madrid 2015 comprised three consecutive steps: The first step is an analysis of the current situation of Madrid and a study of the factors of change that are affecting the present situation of the region and are possibly going to be important for the region in the future. The second step and core part of the exercise involved the definition of a desired Scenario for Madrid in 2015, as well as other future alternatives. The last stage comprised the conclusion from the Scenarios, which are made to define future policies and strategies for the region (Fontanela et al. 2008).

The overall methodological approach of Madrid 2015 was equally based on qualitative and quantitative methods originating mainly from the tradition of strategic prospective (Godet 1994). Qualitative methods applied were PEST analysis (i.e. Political, Economic, Social and Technological forces that drive the region), SWOT analysis and the development of a desired and other possible scenarios. Quantitative tools applied included the modelling of the regional economy of Madrid by means of an input-output analysis and the analysis of interrelations of drivers and carriers of change with Interpretive Structural Modelling (La Comunidad de Madrid 2005).

4.1.3 Outcomes

As a final result the scenario building exercise demonstrated that the “desired” scenario promises the most attractive situation for the region of Madrid in 2015. Nevertheless this potential pathway into the future requires proactive policies in several policy domains, reaching from human, social and technological capital to infrastructures and quality of life (La Comunidad de Madrid 2005).

The contribution of this foresight exercise to urban policy can be summarised in three points: (1) The exercise raised key issues for the region, with particular relevance for policy-making. (2) “Madrid 2015” identified priority areas and ways for mobilising resources to act upon these areas. (3) It identified the critical factors and key players in shaping the future. This exercise is the starting point of a continuous foresight effort in the Region of Madrid (Fontanela et al. 2008).

4.2 Linz 21

4.2.1 Outline

The “Linz 21” project was an ambitious attempt to describe future development paths for the Austrian city of Linz. Its purpose was to enable active design of the city’s future in the 21st century, cognizant of the manifold challenges the municipality now faces. The process was designed for public participation. Several exploratory scenarios were developed in the period from 2002 to 2004. Those scenarios depicted the effects of various action alternatives and supported active and successful strategy development (Schulz-Montag et al. 2008).

4.2.2 Approach and methods used

The foresight exercise of „Linz 21“ was run as an explorative scenario development process. The City Council initiated a participatory process in 2002. More than eighty experts from government and public administration, from the business community and from society at large took part. Ars Electronica Center Linz and Z_punkt The Foresight Company were in charge of the methodic and conceptual supervision (Schulz-Montag et al. 2008).

Owing to the multitude of influencing factors and the complexity of the tasks, a three-phase procedure was adopted for the development of the Linz scenarios. Six central topic areas were first selected and several “rough” scenarios (so-called sub-scenarios) were sketched out for each of these areas. In a second phase these rough scenarios, referenced to specific topics, were brought together to create global scenarios for the future of Linz. In a third phase, the global scenarios were adapted and refined in respect of each topic area (Schulz-Montag et al. 2008).

4.2.3 Outcomes

Scenarios and associated trend analyses were developed within the framework of the project “Our future: Linz 21”. Figure 3 presents these four scenarios for Linz including also the respective subscenarios.

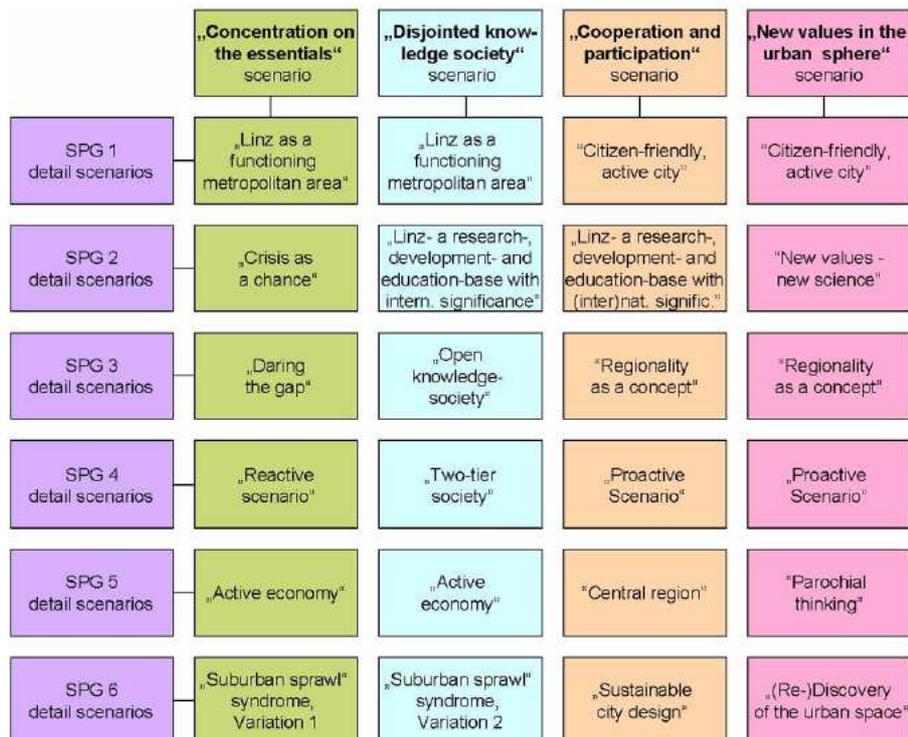


Fig. 3: Global and detailed Scenarios for Linz 21, Schulz-Montag et al. 2008

The present scenarios can include only a finite number of measures and concrete examples. To give the residents of Linz an opportunity to embellish the scenarios with their own new ideas, critical comments and creative additions, the city administration has made the scenarios available to the public via the Internet. They present ranges for action and, as regards to the approach, are explorative in nature. As such, they can be used to depict plausibly the effects of action alternatives and thus serve to support active, sustainable strategy development (Schulz-Montag et al. 2008).



So far mission statements for the future development of Linz still have to be formulated. The people of Linz thus have an opportunity to question the existing “development proposal”, to examine the relevance and plausibility of the scenarios introduced, and to filter desirable developments out of the sum of all those possible. The objective is to derive, from the various futures scenarios, orientation for individual policy and design fields and to formulate a mission statement for municipal action (Landeshauptstadt Linz 2004).

5 URBAN FORESIGHT – POTENTIALS AND LIMITATIONS

5.1 Potentials

5.1.1 Provision of longterm vision beyond time horizons of urban development plans

Both presented cases demonstrate that urban foresight is able to deliver long term urban visions on multidimensional scale. Such visions can contribute to urban policy in the following dimensions:

Foresights as complements to urban development plans

Such urban scenarios can on the one hand function as complements to urban development plans. Because of their longterm orientation foresights can offer thus basic strategic orientations for urban policy in the long run. Depending on the foresights methods applied these orientations can be either qualitative (e.g. “green” or “creative” city) or quantitative (e.g. in the long run expected number and characteristics of household or firms in a town) in their nature.

Foresight as a basis for urban mission statements

On the other hand normative foresight exercises can - as both the examples of Madrid 2015 and Linz 21 show - in particular provide strategic information in several domains of urban policy if a specific desired state of the city in the future shall be reached. In such a case these strategic orientations could be codified in the framework of a mission statement for urban action that is providing strategic orientations for all policy domains of a city.

5.1.2 Active involvement of citizens and stakeholders

Foresight in general offers ample opportunities for participative involvement of stakeholders. This holds also true for urban foresights. As the two case studies show such modes of participation can take place in two different settings:

Participation through foresight methods

Several qualitative and quantitative foresights methods offer potentials for direct involvement of stakeholders. Such an involvement can either take place in the framework of delphi surveys, cross impact analyses or focus groups, or through the participation in scenario development workshops. The involvement of stakeholders reaps several benefits: Firstly stakeholders representing different groups of society in a city enrich the content of a foresight exercise by bringing their personal perspective on issues, secondly a foresight exercise receives a higher degree of public awareness and acceptance if relevant stakeholders are involved, and thirdly contradicting points of view of different stakeholders can more multifaceted pictures of the future.

Participation through dialogue with citizens

As the case of Linz shows, participation of citizens can be ensured with the establishment of open platforms for discussion of already formulated scenarios. Citizens are then invited to comment on these pictures of potential futures. Such a dialogue can contribute to the development of commonly shared ideas and pictures about a city’s future. A similar approach can be taken to support decisions about strategic directions in urban development. In such a case dialogue on scenarios will show public reception of long term strategic policy options.

5.2 Limitations

5.2.1 Data availability

If quantitative methods for the development of a urban foresight are used as in the case of Madrid, problems with data availability may challenge or at least limit the undertaking. Econometric modelling, time series analysis and forecasting or system dynamics modelling will be in need of well defined datasets in order to

produce sensible and robust results. Constraints in data availability can be expected in the following dimensions:

General availability of data

Datasets on urban level may not be available at all and thus will require large scale surveys or particular data collection projects. This may be in particular the case when such issues as behavioural patterns and models of citizens are concerned. Surveys and data collection projects are costly and do in addition only cover a single observation in time.

Geographical resolution of data

Datasets that may be well available at regional level (i.e. NUTS2) but not on city level or even higher levels of resolution such as particular quarters of a town. Thus quantitative modelling could be limited to larger geographical units thus providing only a broad picture of future territorial relevant developments in quantitative terms.

Availability of time series

Forecasting and modelling is in need of timeseries that go well back in time in order to produce sensible results with a good quality. Datasets with high geographical resolution are very often not available in consistent time series. Thus modelling exercises will be limited to data sets with a low granularity of information.

5.2.2 Transforming longterm vision into strategic action

While foresights are very effective and powerful in generating a shared vision and common understanding of a possible or desired future, they tend to fall short in being real input to strategic action as the two above presented case studies demonstrate. Several potential barriers can be identified for this phenomenon:

Election cycles

Long time horizons (i.e. 10 to 25 years) go well beyond any policy or election cycle. Thus urban policy actors have difficulties and limited motivation to take up future challenges or opportunities that may lay ahead a long time.

Uncertainty and fuzzyness

Long time horizons do also lead to rather broad pictures lacking the necessary granularity of information that may be needed for strategy plans. In addition the likelihood of certain future developments might be not determined or very low – forming therefore no solid basis for concrete decisions.

Complexity of scenarios

Urban foresights are often covering complex interactions between physical, environmental, socio-economic and cultural dimensions of a specific territory. Thus the delineation of potential concrete strategic action is difficult and may need to involvement of several administrative bodies and stakeholders. In addition certain strategy option might be only available at a territorial level above the relevant city and thus beyond the sphere of influence of urban policy makers.

6 CONCLUSION

The methods and tools of foresight offer new and versatile approaches to urban planning and development programmes. The cases of Madrid and Linz have shown that that urban foresight is able to deliver long term urban visions on multidimensional scale. It provides thereby either complementary information to urban development plans or inputs to urban mission statements. Urban foresights are very effective in providing room for participation of stakeholders and citizens in such undertakings.

Nevertheless urban foresights are no panacea for long range planning issues at the level of cities and towns. As the anecdotal evidence of the two present case studies shows, do foresights have also specific limitations. Firstly they may suffer from problems with data availability or quality of existing datasets, secondly urban foresights – but this holds also true for technology foresights do suffer from strong barriers on the road from long term vision to strategic action.



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