

Beyond uncertainties: How to envision long-term transformation of regions?

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1 Introduction

Climate change and resource depletion necessitate a transition towards more sustainable landscapes and present new challenges to spatial planning and landscape architecture (AUTHORS, 2010). Adaptation of the larger physical environment to climate change and renewable energy sources will require decennia (SMIL 2008); a timeframe that is clearly beyond conventional planning and design. Many scholars have stressed the importance of considering external trends and forces by means of long-term visions (e.g. KUNZMANN 2000, MINTZBERG 1994).

Over the past years, spatial planners have composed many visions at the regional scale (see e.g. RODRIGUEZ and MARTINEZ 2003). Landscape architects too compose long-term visions employing a design approach to regional planning (WELLER 2008). Despite achievements in spatial planning and landscape architecture, the two disciplines have yet to explore the potentials of a joint approach to strategic regional design.

This paper is motivated by the need to further advance long-term thinking in regional planning and design. The objective is to discuss how to compose imaginative and yet realistic long-term visions for desirable futures. In this paper, we outline a ‘five-step approach’ that can be employed to compose long-term visions such as for the development of sustainable energy landscapes. The methodological framework is constructed on the basis of existing planning and design methods, and reflects upon our experiences from composing several integrated visions both in landscape design practice and academia.

2 Methods

The research reported in this paper commenced with a study of existing approaches to strategic spatial planning, design-oriented planning and landscape planning. All three domains provided important building blocks for a joint approach to long-term visions. Whereas this research on planning and design provided the key building blocks for an advanced methodological framework, case studies and educational activities enabled us to test the emerging framework and to refine the five-step approach.

Over the past five years, we have employed the five-step approach to compose long-term visions for several energy landscapes in the Netherlands. The multidisciplinary project team consisted of architects, urban planners, spatial planners and landscape architects. The close collaboration with decision-makers, stakeholders and energy experts provided us with

continuous feedback. In addition, the five-step approach has been applied in graduate student design studios and MSc theses (e.g. AUTHORS 2008). In this paper, a research and design project on sustainable energy landscapes in South Limburg (the Netherlands) is used to illustrate the five steps of the methodological framework (figure 1).

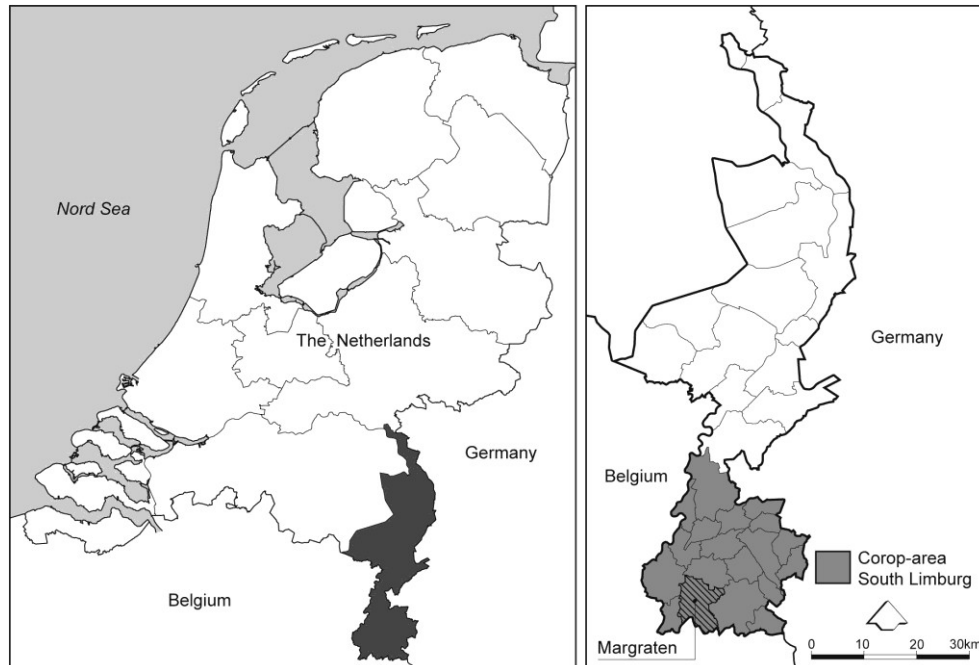


Fig. 1: Location of the province of Limburg in the South of the Netherlands (left map). Municipality of Margraten located in the South of Limburg (right map).

3 Literature study

Any proposal for the long-term development of a large territorial system faces a great number of uncertainties due to the trends and forces that are beyond the control of planners and designers. Despite the difficulties of planning with such uncertainties, it is important to envision a desirable future (ROSENHEAD 2001) and identify actions that can help reaching that future (ALBRECHTS 2004). Among the different approaches to spatial planning and landscape design that have evolved over the past decades, we now discuss a selection of these methods relevant for the composition of long-term visions.

Design-oriented planning is concerned with long-term development at the regional scale. Design-oriented planners aim to influence the actions of those who shape the physical environment by, for example, discussing probable and desired futures (CARSJENS 2009). Dammers et al. describe a ‘cyclic scenario approach’ to design-oriented planning (2005). Their methodological framework consists of four steps (see table 1). The cyclic scenario

approach is relevant to the discussion on long-term visions for a number of reasons. First, it makes sense to focus on a number of key issues in order to identify strategic interventions (ALBRECHTS 2004). Second, “external and policy scenarios avoid the problem to specifically predict the future, [an approach] which is appropriate in complex situations with high degree of uncertainty” (CARSJENS 2009). Three modes of change are addressed by the cyclic scenario approach: *current projected trends*, *critical uncertainties* and *intended change*. One drawback of the cyclic scenario approach, from an operational perspective, is that the development of context scenarios requires substantial resources and special expertise. Employing existing context scenarios may present an alternative that will be discussed later in this paper.

The rationale of *strategic spatial planning* is to “frame the activities of stakeholders to help achieve shared concerns about spatial changes” (ALBRECHTS 2004). Sustainable development is among the shared concerns that require us to employ long-term visions (ibid.). Composing long-term visions is indeed an alternative to conventional planning because it is unlikely that a single (blueprint) plan can address the critical uncertainties and dynamics of large territorial systems. Several approaches have been described in order to structure the strategic spatial planning process. The so-called ‘four-track approach’ (ALBRECHTS 2004) is a prominent example from the current planning discourse (table 1). Much attention is devoted to the question on who should participate in the envisioning process. Very little information exists on how to actually compose the vision. That is, in other words, how to give shape to a desired future. A great value of strategic planning, in general, is the emphasis on *critical uncertainties* and *implementable actions* as two modes of change. Albrechts (2004), however, makes no explicit reference to context scenarios.

Landscape architecture is the discipline concerned with the conscious shaping of the human environment. Landscape architect’s scale of activities ranges from site design to regional planning; the time-scale from medium-term to long-term. Among the different approaches to landscape design, we have chosen to discuss the ‘design framework’ which has been applied successfully in many years of teaching and running projects at the regional scale (see e.g. STEINITZ 2003). According to Steinitz, the design framework aims to “sharpen the questions that we pose to our [landscape architecture] students” (2002). Certainly, the design framework belongs to the most sophisticated and applied approaches in landscape architecture education, research and practice. The framework is organized around six questions: (1) How should the state the landscape be described, (2) How does the landscape operate, (3) Is the current landscape functioning well, (4) How might the landscape be altered, (5) What predictable differences might the changes cause, (6) Should the landscape be changed. Without going into too much detail, we may state that Steinitz (2004) refers to two modes of change - that is change due to *current trends* and change due to *implementable design*. Steinitz, however, makes no explicit reference to critical uncertainties that are beyond the control of the landscape architect and that, from our perspective, cannot be disregarded in long-term planning and design (table 1).

Table 1: Comparison of the cyclic scenario approach, the four track approach and the Design framework

| | Cyclic scenario approach (DAMMERS et al. 2005) | Four-track approach (ALBRECHTS 2004) | Design framework (STEINITZ 1990 and 2002) |
|------------------------------|---|---|--|
| Initial step | Basic analysis - analyse present situation, trends, and policies - identify focal issues | Analysis - analyse main processes that shape environment - agenda setting | Representation - analyse conditions Process - study relationships Evaluation - identify dysfunctions |
| First mode of change | <i>Analysis of current trends is part of analysis</i> | <i>No explicit reference to current projected trends</i> | Change caused by current projected trends - identify trends |
| Second mode of change | External scenarios - compose scenarios to identify possible futures | <i>No explicit reference to context scenarios and critical uncertainties</i> | <i>No explicit reference to context scenarios and critical uncertainties</i> |
| Third mode of change | Policy scenarios - explore alternative policy strategies | Long-term vision - represent values and meanings for the future | Change caused by implementable design - describe interventions |
| Final step | Recommendations and knowledge questions - support development of policy strategies - masterplan with short-term actions - contingency plan with long-term actions | Short- & long-term actions - short-term actions to solve present problems - long-term actions to achieve desired future Budget and strategy for implementation - creation of commitment | Impact - estimate impact of alternative interventions Decision - support decision making process |

The above three frameworks provide building blocks for an alternative approach to long-term visions. All three approaches, to begin with the similarities, aim to support decision making. The first three steps of the design framework correspond to a great extent with the ‘analysis phase’ of the planning frameworks. The estimation of the impact of alternative interventions, suggested by Steinitz (2002), is similar to the evaluation of policy strategies suggested by the planners. One substantial difference is that Steinitz (2002) and Albrechts (2004) make no explicit reference to the use of context scenarios in the planning and design process. Dammers et al. (2005), in contrast, suggest the development of context scenarios as part of the planning process. Strategic spatial planners, generally speaking, recognize the significance of external trends and forces that influence the future of a study area (see e.g. FRIEDMANN 2004). Rosenhead stresses that “strategic planning cannot be firmly based on an attempt to predict what will happen [...] identifying a range of versions what might happen, would be a modest and supportable basis for planning analysis” (2001).

We propose to adopt a similar approach to long-term regional design; critical uncertainties should be integrated in the design process. Whether globalization will continue in the future is one of the critical uncertainties. Globalization clearly influences land use patterns and consequently affects the design of sustainable energy landscapes. Further enlargement of the farms in South Limburg, for example, does reduce the number of small-scale landscape elements and the amount of biomass that can be harvested from these elements.

4 Methodological Framework long-term visions

In order to compose imaginative and yet realistic long-term visions (HEALEY 2009), we argue that current projected trends, critical uncertainties and intended change must be integrated in the design process. Each of these modes of change translates into one step in the methodological framework, namely *near-future developments*, *possible far-futures* and *integrated visions*. Those three steps are complemented by the analysis of *present conditions* and the identification of *spatial interventions* (figure 2).

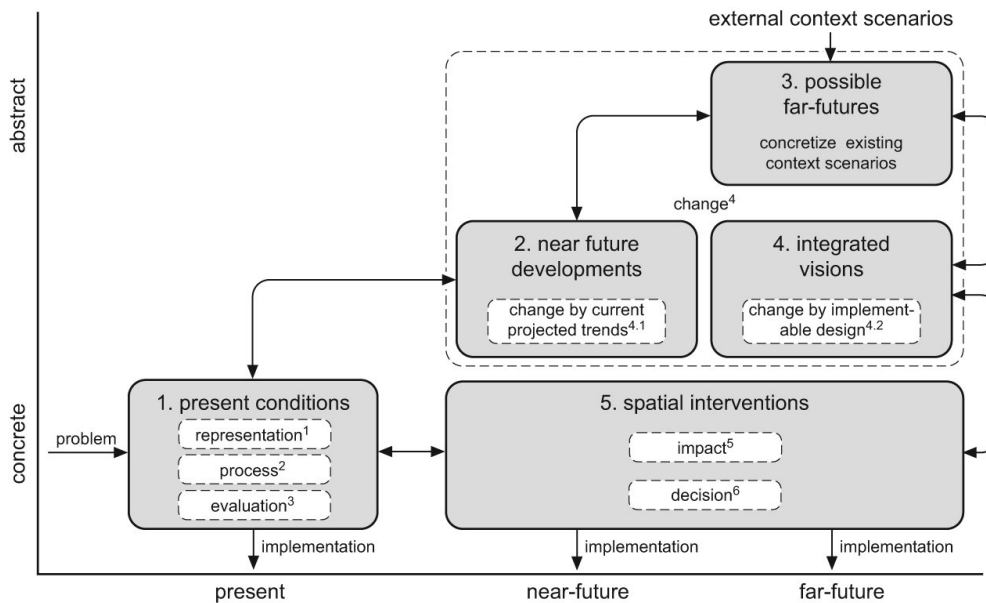


Fig. 2: Methodological framework of the five-step approach. White boxes and superscript numbers refer to the steps as described by Steinitz (2002).

The methodological framework is organized around a set of five questions, each one subject to one step of the design process. The sequence of five steps should be passed through (at least) twice. During the first cycle, the context and scope of the study are defined. Also, maps and data are gathered, stakeholders and decision-makers invited to participate. During the second cycle, the visions are composed and spatial interventions identified. Although, the framework consists of five steps, the envisioning process is iterative. It may be necessary to return to an earlier step in order to answer all questions. We now describe the five steps in detail.

4.1 Analysing present conditions

The first step centres on the question “How does the present region function and how can it be evaluated in comparison with other regions.” Landscape analysis includes both the study of present conditions and historic developments. While envisioning sustainable energy landscapes, it is also necessary to analyse the present energy system and map renewable energy potentials (for example see DOBBELSTEEN et al. 2007).

4.2 Mapping near-future developments

The guiding question of the second step is “How will the region change in the near-future.” In order to answer that question, one must analyse current trends and policies, map planned developments and consult key decision-makers in the study region. This way, one can, for example, reveal where land is being set aside to expand ecological corridors.

4.3 Illustrating possible far-futures

The guiding question of step three is “What kind of possible long-term developments (at which location) are expected in the study region.” A selection of possible far-futures can be illustrated with help of existing scenario studies (see e.g. HANEMAAIJER et al. 2007). Each scenario storyline is illustrated with help of a scenario base-map (see figure 3).

4.4 Composing integrated visions

The objective of step four is to compose a set of integrated visions. Each vision should reveal “How to turn a possible future into a desired future.” That question can be further specified to meet the objective of the study. Integrated visions do not aim to render THE ideal future; rather they reveal different pathways of reaching a desired future (figure 4).

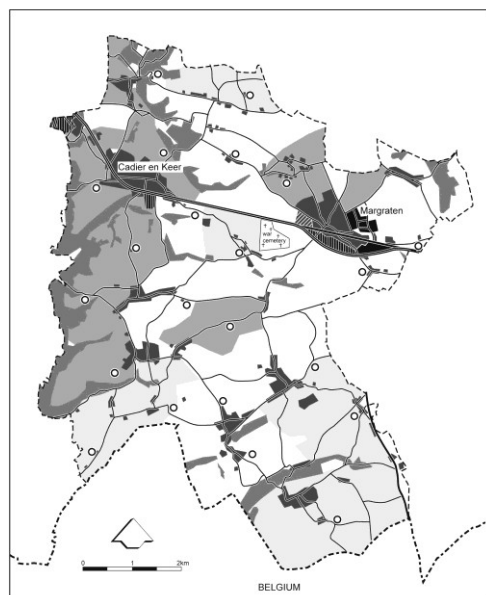


Fig. 3: Base-map Global Market scenario illustrating possible far-future developments in Margraten.

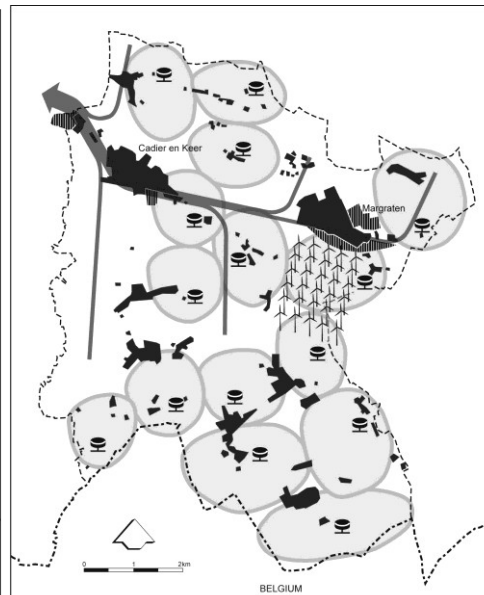


Fig. 4: Energy vision Global Market scenario indicating the location of a new windpark and other interventions.

4.5 Identifying spatial interventions

The final question to be answered in the design process is “Which possible intervention should be implemented.” Possible spatial interventions should be identified and illustrated in a comprehensive manner. Plans, tables and reference images are helpful in the discussion with decision-makers. If resources allow, possible spatial interventions can be further examined employing methods such as ‘strategic choice approach’ (FRIEND 2001) and ‘robustness analysis’ (ROSENHEAD 2001).

5 Conclusions

Climate change does challenge the way we plan and design the physical environment. Adaptation to climate change and transition to renewable energy sources requires strategic thinking and long-term visions. The far-future, however, depends on critical uncertainties and is considered rather unpredictable. Yet, there is broad consensus that a range of possible futures can be explored through scenarios. In this paper, we argue that state-of-art scenario studies can and should be utilized in long-term landscape design.

Based upon design practice and the study of existing methods in planning and design, we put forward the ‘five-step approach’ - a methodological framework that facilitates the integration of context scenarios in long-term planning and design. The first step of the proposed approach is to analyse the present conditions in the study region. Today’s physical reality is however not the only ‘starting point’; current projected trends and critical uncertainties are integrated as well. Consequently, a set of integrated visions has to be composed. Each vision depicts how to turn a possible future (described in the respective context scenario) into a desired future. Finally, spatial interventions are identified that can help realizing that future.¹

Employing the five-step approach does not necessarily lead to a spatial plan or design in the conventional sense. Rather, it results in a set of integrated visions, and a list of possible interventions that should be illustrated through reference images and photomontages. Empirical data such as the reduction of CO₂ emissions for each possible energy-conscious intervention can further facilitate decision-making.

In conclusion, we like to emphasize that the here presented five-step approach for the composition of long-term visions presents a flexible framework; the stated questions can be further specified to suit the objective of the study. Each of the five steps of the framework can be operationalized through methods such as the ‘multi-layer approach’ (SIJMONS 2002) or ‘energy potential mapping’ (DOBBELSTEEN et al. 2007).

¹ A selection of concepts and theories relevant for the design of sustainable energy landscapes are presented and discussed in Authors, 2010 and 2011.

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