

Regional Design: impacts on territorial governance and planning practice

Fuelling energy-transition with regional design ateliers

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Abstract: Many countries are ‘planning’ for energy-transition in the light of the challenges imposed by climate change. Energy-transition is expected to radically change the structure, the institutional design and the physical appearance of our energy system. One of the critical issues is to integrate energy-transition with other land-uses and spatial issues. In the Netherlands, regional design ateliers were organised to address these challenges. We studied eleven regional design ateliers to find out what the design ateliers contributed to dealing with energy-transition. Our analysis showed that the design ateliers played an important role in creating insights on the spatial implications of energy-transition. This raised awareness amongst regional stakeholders on the impact of energy-transition, and affected their perspectives. However, our study also showed that some important (spatial) aspects, such as smart combinations with other land-uses and the transport and storage of energy, received little attention. Understanding energy-transition took up a lot of time, leaving little room for a full exploration of relationships with other land-uses, of possible solutions, and of integrated strategies. Therefore, we conclude design ateliers should also be organised in upcoming stages of ‘planning’ for energy-transition to further fuel the transition process and fully employ the benefits of regional design ateliers.

Keywords: regional design, energy-transition, spatial planning.

Introduction

‘Planning’ for energy-transition has become an important topic in the planning domain. The challenges imposed by climate change and the 2015 Paris Agreement urge countries to push their current fossil-based energy system towards a sustainable low carbon system. This is not an easy thing. Energy-transition, that is the transition towards a fossil free sustainable energy system, is a ‘persistent’ problem (Rotmans and Loorbach 2009). Furthermore, existing norms, rules and regulations can hinder or block the uptake and implementation of promising innovations, meaning that in energy-transition institutional and societal innovations are as essential as technical innovations (Hackmann *et al.*, 2014; ISSC, 2013; Sovacool 2014; Weaver *et al.*, 2014).

One of the critical issues in planning for energy-transition is to accommodate and integrate the implications of the energy-transition with other land-uses and spatial issues (De Boer and Zuidema, 2015; Oudes and Stermke, 2018). Recent studies show the enormous impact energy-transition will have on the existing landscape (e.g Sijmons *et al.*, 2017; Kuijers *et al.*, 2018). This impact not only concerns the allocation of renewable energy sources such as wind turbines and solar panels. Energy-transition also calls for new infrastructures and

distribution networks, for energy-storage facilities, for new smart combinations of land-use, and for refurbishment or replacement of existing buildings. These kind of developments go beyond technical innovations and the spatial allocation of renewable energy sources. They call for policy innovations and new institutional structures and arrangements. However, what exactly is needed and which pathways for energy-transition can be followed is unclear.

In the Netherlands, regions are considered the crucial level of scale for addressing the challenges of energy-transition (SER, 2018; Rijksoverheid *et al.*, 2018). In various regions, leading up to regional debates and in preparation of a regional energy strategy, regional design ateliers have been organised to address these challenges and fuel the energy-transition process. Regional design ateliers can be understood as cycles of multiple (generally two to three) one-day meetings in which regional stakeholders, under the guidance of a team of spatial designers, explore and discuss spatial issues and challenges (Kempenaar and Van den Brink, 2018), in this case focussed on energy-transition in the region. We studied eleven energy-transition based regional design ateliers that were held in 2016 and 2017 in the Netherlands to find out what these regional design ateliers contributed to dealing with the challenges imposed by energy-transition.

Regional design ateliers

In regional design ateliers, spatial designers (e.g. landscape architects, urban designers) prepare, organise and hold multiple atelier sessions, in which various relevant regional stakeholders are invited to participate. The results of these atelier processes generally have the aim to be used in (strategic) spatial planning processes (Kempenaar forthcoming). Within strategic spatial planning they serve multiple purposes and have different roles. Regional designs can have a determining character, for example in establishing the common denominators in a region, a problem-defining and agenda-setting character, when it addresses new challenges and issues, a proposing character, e.g. when it support decision making with multiple options, or a composing character, for example in the situation where it connects stakeholders with actions (De Zwart, 2015).

During regional design atelier sessions both the problem and solution space of spatial issues and challenges are extensively explored and discussed with and between stakeholders (De Jonge, 2009; Kempenaar *et al.*, 2016). While doing so, the characteristics of the regional situation and other spatial developments, issues and challenges are always taken into account. After all, the region is no tabula rasa, and multiple trends and ambitions determine the future of the region. Furthermore, regional design envisions possible future regional situations, including how they can come about, and therefore focuses both on the content and process of future developments. In other words the institutional design of the process of change is, next to the spatial dimension, an integral part of the issues addressed.

Regional design ateliers are soft spaces in which stakeholders and designers freely explore spatial issues and their possible solutions (De Jonge, 2009). They generally have little formal power as decision making takes place in other settings and designated places. Interestingly, this relative absence of power, and a strong focus on substantial issues and real situations, is said to create circumstances enabling a genuine dialogue (Ceschin and Gaziulusoy, 2016; De Jonge 2009). In this dialogue, information, knowledge and perspectives are shared and new relationships emerge. Furthermore, this dialogue enables collective conceptualization and envisioning (Kempenaar *et al.* 2016), opening up new perspectives, possibilities, and never-thought-of ideas. It also changes conditions for future developments as it affects the perception of stakeholders, it prepares them for future action and it builds relationships and networks (Kempenaar *et al.*, 2016). These are valuable assets energy-transition processes.

Methods and Materials

In the spring of 2016 the ‘Deal Pilots Regional Energy Strategies’ was drawn up between various governmental organisations in the Netherlands. A group of five regions were selected out of a group of twelve as pilots and

received funding to develop a Regional Energy Strategy (RES). The focus of the Regional Energy Strategy would be an energy-neutral region in the year 2050.

Part of the funding for developing a RES was labelled for organising regional design ateliers. Initiated by Atelier X of the Ministry of Internal Affairs (formerly part of the Ministry of Infrastructure and Environment), a particular goal within the deal was to employ design in exploring and researching the spatial dimensions of regional energy-transition. This resulted in the organisation of regional design ateliers in all five pilot regions.

In addition to the five pilot regions, six other regions are included in this study that organised energy-transition oriented design ateliers supported by Atelier X. Two regions hooked on to the process of the RES-deal, their interest being to learn and gain experience in the ins and outs of regional energy-transition. Four other regions organised regional design ateliers on energy-transition as part of their own (spatial) planning and development processes.

In line with the five pilot regions, all regional design ateliers included in this study took regional energy-neutrality in 2050 (or earlier) as a starting point. Furthermore, they all focussed on formulating and reifying the regional challenges in reaching energy-neutrality, identifying its' spatial impact and opportunities, and the translation of ideas into possible strategies and projects.

To analyse the 11 regional design ateliers we gathered documents on the regional design ateliers via websites, via contact persons, and via personal contacts. The documents were analysed on four different aspects of the regional design ateliers. These are 1) the input for the design sessions, 2) the process or institutional design of the regional design atelier, 3) the output of the design atelier, and 4) the context of the regional design atelier. To supplement the findings from the document analysis, as well as to triangulate the first findings, six interviews were held with designers, consultants and stakeholders involved in multiple of the studied regional design ateliers. These interviews were analysed on the same four aspects of the eleven regional design ateliers. The findings from the document & interview analysis were then discussed with a focus group of 16 experts stemming from various organisations involved in regional energy-transition processes in various Dutch regions.

Results

The spatial dimensions of energy-transition

The analysis of the 11 design ateliers showed that they all created insights on the regional dimensions of energy-transition and its' spatial implications. In each of the design ateliers the stakeholders looked at, and discussed calculations on the current energy-use in the region, the expected future energy-use, the potential for energy-reduction, the existing regional renewable energy production, and the potential for renewable energy sources in the region. The calculations differentiated between gas-, heat-, electricity and other kinds of energy, and between the different demanding sectors, such as industry, housing, transport, agriculture, and offices. For those stakeholders not stemming from the energy-domain, it was enlightening to start learning about what energy-transition actually encompassed.

In addition to the calculations, the use, the expected use and particularly the expected regional potential for renewable energy was translated into spatial dimensions and mapped out for the region. The potential for wind-energy was for example translated into the amount of wind turbines of a certain height, as was the solar-energy potential translated into ha. of solar-parks. These were then placed on a map of the region, clearly indicating the spatial footprint needed for producing enough energy from renewable sources to meet the regional energy demand (as regional energy-neutrality was the starting point of all design ateliers).

In this mapping, specific regional situations were taken into account. For example obstacles or restrictions related to certain land-uses, or protected sites (e.g. nature reserves) were included in the maps. Also the

opportunities for using residual heat was explored, capitalizing on the proximity of housing near heat producing industries.

The visualisations, and particularly the visualisation of the spatial footprint of different renewable energy sources, triggered a lot of discussions. Most of all it created insights and raised awareness on energy-transition amongst stakeholders. Talking about percentages and peta joules (a much used unit to indicate energy) seemed to have kept the discussions up till then rather abstract. Drawing and mapping the implications made them concrete and foreseeable, revealing the radical impact of energy-transition on the existing landscape and spatial situation.

The ateliers furthermore made the stakeholders aware of various uncertainties and unknowns related to energy-transition. Geothermal energy, for example, is seen as a promising potential energy-source. However, its potential depends on the specific geomorphological/geological regional situation. Detailed mapping of this situation is only available for a few areas in the Netherlands, making it hard to incorporate feasible estimations of geothermal energy in the future energy mix of the region. This also accounts for yet unknown, innovations and the development of promising new technologies.

What not addressed

Despite the extensive mapping and visualising of the spatial implications of energy-transition in the regional design ateliers, not all spatial dimensions were fully addressed and explored in the ateliers. Whereas the spatial footprint of renewable energy sources got attention in all ateliers, only a few touched upon the issue of adjusting and renewing the infrastructure for transport of energy. Nor storage facilities for storing the surplus of produced energy, or the spatial dimension of reducing energy use were extensively addressed and explored. Each of these topics, depending on future developments and choices, has specific spatial implications and land-use demands, and is critical in planning for energy-transition.

Furthermore, in most of the regional-design ateliers the relationship of energy-transitions with other spatial issues, challenges and developments was not properly addressed. Energy-transition, as any other major transformation in the spatial domain, leads to opportunities and obstacles for other existing and future land-uses, with potential synergies and trade-offs. One region did incorporate a first exploration of the relationships of energy-transition with economic developments and the revitalization and renewal of neighbourhoods. However, other land-uses and spatial issues such as agriculture and flood-protection were left untouched.

Outside the scope of the region

All 11 regional design ateliers had their main focus on the region, and the discussions were guided by the idea to make the region energy neutral. This raised discussions in all ateliers on the delineation of regional energy-transition. What should be taken into account and what should be left out. What to do for example with national and international transport, both over land, water and by air, related to the inhabitants and businesses in the region? Also the question arose in some ateliers on what to do about other sources of greenhouse gases (e.g. agriculture or peat oxidation), should these also be included in a regional strategy? Each region took a pragmatic stance on this in the end and clearly indicated what was taken into account and what not.

Furthermore, the relationship with both the local and (inter)national scale was regularly addressed in the majority of the design ateliers. Although the discussions took place on a regional level, implementation of ideas and concrete actions will have to take place on a local level. In addition, some of the investments needed in the future, particularly where new infrastructure is concerned, cannot be decided on, or financed by the region itself. This calls for participation and action from the national government and actors operating on a (inter) national scale.

Finally, in a few regions the discussion also turned to the position of the own region towards other regions. For example, one of the regions discovered during the atelier-sessions that it probably would be able to cover its own future energy demand quite easily with renewable sources, considering the available space in the region. This opened up the exploration of the idea of becoming an energy-supplying region. However, most regions did not (yet) reached the point to address its' relationships with other regions in relation to energy-transition.

Unfinished conversations

The findings on the design ateliers on regional energy-transition in the 11 regions give the impression that the conversations in the regions on the spatial implications of energy-transition have just started and are far from finished. First insights were created, shared and discussed on the spatial dimensions of renewable energy production, the spatial footprint, on the future energy-use and energy-mix in the region. The analysis furthermore shows that other important spatial implications have only been briefly touched upon were completely left out. These include new energy-infrastructure needs and energy-storage facilities, the spatial implications of energy-reduction, relationships and smart combinations with other land-uses and spatial developments, relationships with the local and (inter)national scale, relationships with other other (neighbouring) regions, and a full exploration of the translation of the spatial implications towards a (spatial) strategy.

The seemingly limited scope of the conversations in the regional design ateliers can be explained in several ways. First of all energy-neutrality within the region was the more or less fixed starting point for the design ateliers and the development of the regional energy strategy. This perspective turns the focus automatically inwards to the region itself and less to (possible) relationships with other regions or the local and (inter)national scale.

Secondly, energy-transition is a relatively new topic in the spatial realm, making that stakeholders rooted in this domain still have to become familiar with the ins and outs of the energy-system and future options. This is also the case for all other stakeholders from outside the energy-domain. Furthermore, a similar thing accounts for stakeholders from the energy domain. They have to become familiar with integral perspective and ways of working of the spatial realm. A lot of 'getting to know' and learning took place in the ateliers in order to have a good conversation on the central issue addressed, that is the spatial implications of energy-transition in the region.

Third and finally, energy-transition is encircled with a lot of uncertainties and unknowns. Although a sense of urgency is felt by many, it is unclear what the best way to go is. For example, certain techniques are quite well developed, such as wind turbines and solar panels, whereas others, such as geothermic, are promising but still underdeveloped and unsure. These unknowns and uncertainties inevitably will change in the future, opening up, but also closing down options and possibilities.

Discussion & Conclusion

The results of the study show that all 11 regional design ateliers on energy-transition produced new insights and ideas, and influenced the perspective of the involved stakeholders. To fully employ this influence potential of regional design ateliers two factors are of interest: the embeddedness of the regional design ateliers in the overarching transition management process, and the range of stakeholders involved in the design ateliers. The studied 11 atelier processes all had a different embedding in the overarching process. Some were part of drawing up a regional energy strategy, whereas others were rooted in the development of new spatial visions. Furthermore, the institutional design of each of these processes was different, leading to different use of the results and outcomes. The context in which regional design ateliers are embedded pre-determines where they are expected to have their influence (Kempenaar *et al.*, 2019). This embeddedness should therefore be a point of careful consideration and attention in the institutional design of transition management processes.

The range of stakeholders involved in the regional design ateliers was broad and varied between the 11 studied ateliers. Predominantly, the stakeholders came from energy-related and spatial planning-related public and private organisations. In some cases the amount of stakeholders involved grew during the atelier sessions up to over a hundred people. The involvement of both inhabitants and politicians was limited in most atelier processes, although most included them at dedicated moments during the process. There seems to be no 'rule of thumb' on how or when to involve either of these specific groups in regional design ateliers, whereas particularly the involvement of politicians or other decision-makers can be valuable in influencing decision making. Further research into influential regional design ateliers, or in comparable processes, such as design-charrettes in the US (e.g. Condon, 2008; Lennertz and Luzenhisser, 2014), could be the base for developing guidelines for the involvement of different stakeholder groups.

To conclude, the study of 11 regional design ateliers revealed the value of these ateliers in regional energy-transition processes. However, design ateliers are not the only valuable activity. Research, technical innovations, experiments, implementation project etc. can all make valuable contributions. The various activities should be well embedded in the overall institutional design of the transition process, so that all activities can mutually benefit from each other. Furthermore, the analysis also revealed that the potential of regional design ateliers was not fully employed yet. Leading to the recommendation to continue the organisation of regional-design ateliers as part of the regional energy-transition process. In addition, uncertainties and unknowns develop and will disappear or change over time, also from this perspective it can be worthwhile to organise additional regional design ateliers as part of program of activities that fuel regional energy-transition.

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