Reflection

In this paragraph I reflect on the objectives of my project, discuss the gaps, present suggestions for further research and finally reflect on the role of the urban designer.

Objectives

The first objective of the project was to argue for the transition towards sustainable energy. While I believe my research to be convincing in this matter, the final outcome of my approach barely contributes to it. Significant measures evolve around a reduction of demand and the indispensable contribution of wind energy. This is the most productive renewable source, but at the same time the most agitating one. This raises the question why to bother at all, rather than that it sets the energy transition in a more positive daylight. I aimed for more acceptance towards renewable developments, I actually ended up with an argument against it.

The second objective was to bridge the gap between the government and the people when it comes to the spatial distribution of sustainable energy sources. Initially I aimed to do this by designing multifunctional renewable energy projects on the local scale. However from the interviews that I conducted I learned that actually in current times, the local social acceptance is by far not the biggest problem of the energy transition. It is about the government and its policies. The problem is that they are still trying to figure out how they can implement the energy transition in their spatial agenda. In fitting renewable energy within the environment in a way that accommodates the other strategic goals that they have for the region. Every interviewee stated that small local initiatives are fine, but they will never make the difference. This did not contradict the hypothesis of multifunctionality being a solution for acceptance, but it influenced the aim of my research by shifting to a larger design scale. I believe the final design succesfully bridges the gap between the government and the people as it considers the acceptance issues from both parties and advocates for more flexibility in top-down as well as in bottom-up initiatives.

A third objective was to make a contribution to the scientific body of literature on energy landscapes. I believe that I did a valuable research on the concept itself, having done an extensive literature review and theoretical improvements. Additionally for me the concept of the energy landscape and its spatial patterns presented a clear objective in itself during the project as it was a constant reminder of the complexity of spatial impact due to energy purposes. Therefore I think that it is an important and useful tool for environmental designers in planning for the sustainable future.

And the last objective was for the project to explore whether the design of multifunctionality in renewable energy projects leads to a more publicly accepted energy landscape. I have claimed to think that it does, because my research incorporates various aspects of acceptance and the final design considers all the findings in order to create suitable, multifunctional energy projects. However it is not proven. It would be nice to go back to the interviewees, especially the governmental ones, to see if this is an approach they would be interested in.

Gaps

Within the projects there are several gaps that should be noted.

1) I have narrowed my topic down to the production, transportation, consumption and storage of renewable energies and their spatial impact. Hereby I excused myself from considering the energy and fossil resources that are needed in order to build the necessary wind turbines, solar panels, geothermal hubs, transportation infrastructure and storage facilities.

2) As I am a designer and not a financial expert, the costs of all the proposals are disregarded. However money plays probably the largest role in the whole discussion on the energy transition.

3) An important aspect of the concept of the energy landscape is the management of ecosystem services and a lot of literature actually focuses on biodiversity while I shifted the focus to people.

4) I conducted several interviews with different stakeholders, but the one I believe is really missing is an interview with a representative of a protest group. This could have given an interesting perspective on the matter, because the interviews influenced my project a lot and I can only wonder what direction in terms of acceptance I would have taken if had talked to this particular stakeholder. Despite several attempts, I have not been able to contact one and have based my conclusions regarding this stakeholder mainly on news notifications.

5) I have made multiple assumptions and estimations in the calculations for my final design. This lowers the level of confidence with regard to the numerical results. In addition to that I have not been able to calculate the energy savings that are made with the geothermal implementations in the housing stock. I can not imagine that it makes a significant difference for the total demand but it should at least be considered.

6) I have not incorporated the large industry of the harbour in my strategy design, while actually this is a large contributor to the problem. I chose to do this because during my research I repeatedly found that renewable solutions were not sufficient for the demands of this sector, especially concerning the high temperatures that are needed.

Recommendations for further research

- consider the energy and fossil resources that are needed in order to build the production devices, by for example developing a renewable energy source passport that shows insight in the efficiency and spatial aspects but also the financial and environmental costs
- research the role of costs and effects of subsidies, carbon budgetting and a price for CO^2
- advance the calculations and include the reduction in demand from geothermal energy projects in order to make a better conclusion on the value of the transition
- research sustainable possibilities for the industry of the harbour, such as circularity
- examine the acceptance of the design proposal by taking it back to the government

The urbanist has a powerful tool at hand by designing and visualizing our future environment. For this thesis I specifically chose to approach this in a realistic way, because for me the essential part of an urbanist is that you consider the society. However the realistic result in the sense of achievement is rather disappointing. It makes me contemplate whether in order to really be able to change our environment, urbanists are obliged to think out of the box in their designs and proposals. This always shakes things up and creates ground for discussion, on which society thrives. On the other hand the result of my realistic approach also provides interesting issues for debate. I think that the difference is that with the out-of-the-box approach you present a solution, while with the realistic approach you make progress in the discussion. And both are needed in society.