

Reflection

The conclusion



Farm along the Wadden Coast.
Photo: Author, 2022.

Reflection

1. Research approach

This project adopts the ‘research by design’ method in which the design is taken as a research strategy for approaching the challenges in the Wadden Coast . The research part involved the collection of data regarding the three systems (water, cultural and socio-economic systems) to analyze, synthesize and identify the major landscape processes which act as a basis for the design projection. The information is quite overwhelming but this analytical framework helped me organize and structure the research part and gave me ideas on how to approach the project. By overlaying data and interpreting the maps, the mapping process results in knowledge acquisition which built up the research part and contributed to the design proposal. Due to the huge amount of information and data, I collected unnecessary data that was not related to the design proposal. Nonetheless, the selection of information is part of the learning process and it allows me to explore and understand the landscape in a holistic approach

Scenario-making plays an important role in the project which supports the decision-making processes in the issues with a high level of uncertainty. The research developed three scenarios with different sea level rises and flood conditions in 2100 by collecting and studying the flood data in the National Water and Floods Information System (LIWO) . Scenario is a tool for exploring the future uncertainty and inducing reflection on spatial consequences on the basis of hypothetical reasoning. By asking the question “what if”, a design proposal is made based on the scenarios to demonstrate a range of possibilities which is the level of protection of land and the acceptance for the water in the future. Nevertheless, I found it difficult to interpret the flood data. The flood probability and flood depth maps are the speculation of flooding under a variety of conditions, such as the primary dike breach and the flood caused by the regional defense systems. The explanation and the reasoning behind those maps are insufficient so that the flood scenarios I have made might not be accurate. The future climate uncertainty and the dike reinforcement also weaken the accuracy of the scenarios.

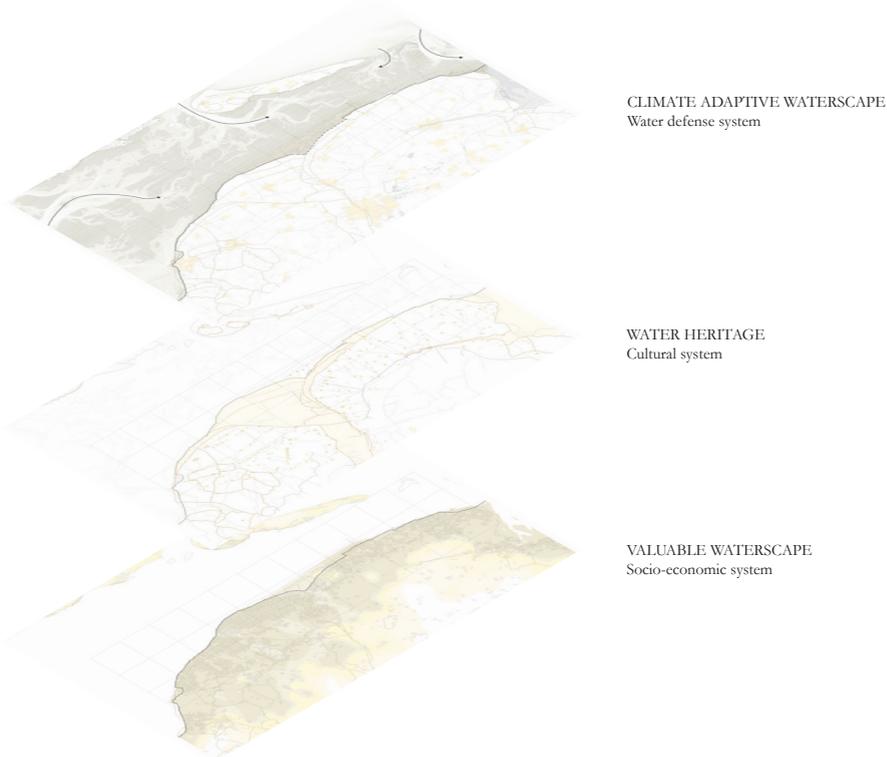
The research worked on multiple scales, ranging from the territorial scale to the local scale. Analysis on territorial scale addressed the global challenges like the rise of sea level and the vulnerability of the Dutch Wadden Sea. Regional scale highlighted the cultural identity of landscape and the social and environmental crisis in the province of Friesland. Lastly, the local scale illustrated the sensorial and spatial landscape qualities along the coast of Friesland.

This research approach synthesizes the particularities and temporality of the Friesland Wadden Sea landscape and forms a solid basis regarding the problem fields and design interpretations for the design proposal.

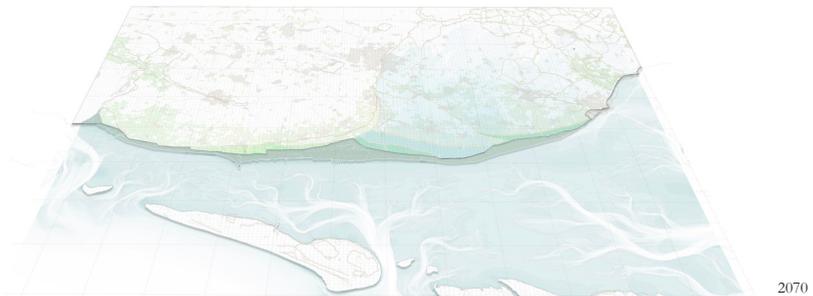
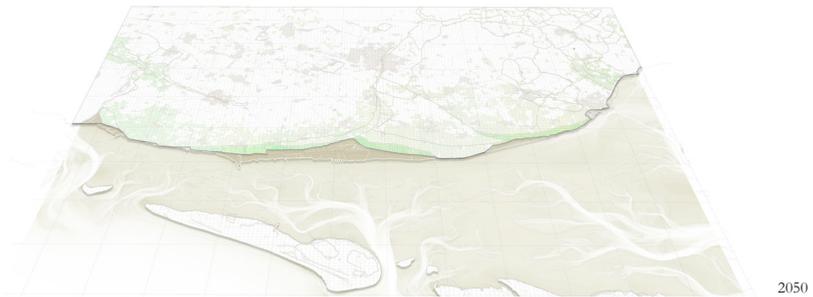
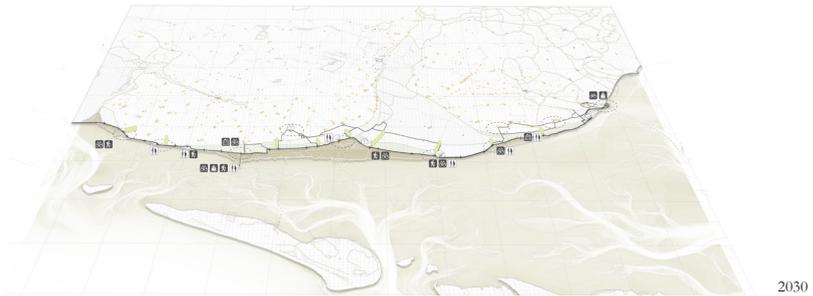
2. *Research & Design*

The design proposal is a translation of the research results into an integrated and innovative project. The research part which focuses on the water, cultural and socio-economic layer analysis induces three design pillars (climate-adaptive waterscape, water heritage and valuable waterscape). Based on that, three design strategies were made and built up the vision for sustainable flood protection and resilient landscape in the Friesland Wadden Coast.

Landscape diagnosis is done by compositing the layers of my research, in particular the cultural heritage and the future flood scenario, for site selection to develop the strategies in detail. I think this process is crucial since it determines the site location and helps me shift the design thinking from regional scale to local scale. I picked three design locations regarding three water conditions at first: 1. Brackish water along the coast 2. Freshwater in the polders along the sea dikes 3. Freshwater in the river basin. I am aware that a comprehensive design on water management should take account of the river basin in the inland areas. Nevertheless, my interests on the coastal landscape and the fact that the research on the river basin is not abundant enough to support the design brought me to the decision of focusing on one design location that is the most significant. This decision is difficult but I believe it is the best outcome for a nine-month graduation thesis.



Three master plans are made for the year of 2030, 2050 and 2100 to illustrate the proposal in short-term and long-term development. Climate adaptation is a long-term measure working with the natural processes to resolve the global climatic issue. Meanwhile, the routing together with a set of small-scale interventions could be implemented in the short term as an instant measure to enhance the landscape identity. Schematic design and small-scale interventions showcased how the strategies work on the ground and the spatial design facilitating landscape processes.



3. Relation between graduation topic, studio topic, and master track

This project is part of the Wadden Sea Lab in the Flowscape studio as the graduation studio of the MSc Landscape Architecture. The Flowscape studio focuses on the integration of the spatial design with the landscape processes, the continuation of spatial quality and cultural identity of the landscape. The studio specifically discussed ‘infrastructure as landscape’ and ‘landscape as infrastructure’ in which the research project addresses both the regional and small interventions interrelating and being part of the territorial transformation processes. The Dutch Wadden coast, in particular the sea dikes and marshlands, is a significant infrastructure acting as an interconnected network for the dynamic natural ecosystems and protecting the nation from coastal flooding. My graduation topic redefines infrastructure beyond its traditional definition while introducing an integral approach to facilitate the natural and socio-economic processes, and strengthening resilience and local identity.

The Master’s Program in the Landscape Architecture track trained students in systematic thinking, ecological design, and cultural literacy with a view to providing a holistic approach to protect and enhance the living environment. The track teaches students to transform and create compositions ‘through’ scale, time and as a process through critical academic research. My graduation project is design research which designs on multiple scales and involves in a phasing design plan, taking account of cultural, ecological, social and economic conditions. Landscape palimpsest is interpreted with a thorough research on the past and mappings. The track’s emphasis on the intersection between architecture, engineering, and landscape allows me to collaborate and get new insights from my second mentor, Mark Voorendt, an engineering professor in the Hydraulic Engineering department.

4. Relationship between the project and the wider social, professional and scientific framework

The research and design proposal will be a new knowledge contributing to the society, landscape architecture and the scientific fields, offering a new perspective dealing with the climatic and social issues in the Wadden Sea. ‘Research by design’ is a powerful research approach in which complex issues can be resolved by spatial design. The research methodology which emphasized on site specificity and complexity is a possession of knowledge that can be applied to other projects all over the world. The design proposal itself might also be applicable to other places with similar conditions and issues along the Wadden Coast. Also, the Wadden Coast is often being neglected and hence the research targeting the Wadden Coast could gain knowledge on the natural and cultural identities, as well as raising the awareness from the public.

Furthermore, the research responded to the needs of the society and the environmental challenges. The project explored the spatial, societal and environmental issues by design research and made design proposals addressing the above issues. The discussion with the Friesland municipality and the local dwellers allowed me to understand the issues from different perspectives and their needs so that the proposal could respond to them. The local dwellers value the cultural identity and the short-term development while the municipality has the responsibility to ensure the flood protection and the livability of the region in the long run. Therefore, a design proposal with a long phasing plan is part of the consideration.

The profession of landscape architecture has been diversified, from working multi-disciplinary to preparing strategy within legal frameworks, advising on policy-making, and master planning for development and regeneration schemes. My graduation project is an integration with landscape, urbanism and engineering disciplines. The project is a new input for the municipalities and urban planners to carry out in the future. The project also demonstrated a holistic landscape approach on dike reinforcement and flood management in the nation.

5. Ethical issues and dilemmas

In this project, I am looking for a landscape integrated approach as a catalyst for the coexistence of the flood protection and landscape resiliency to deal with the global climatic issues. Rather than taking the sea dikes as a hard infrastructure, the project challenged the traditional mindset of regarding flood management merely as a hydraulic engineering element. Dike reinforcement is also a task for landscape architects to rethink and design the dike integrating with this ecologically and culturally rich landscape, to provide maximum resiliency.

As one of the UNESCO World Heritages, the Wadden Sea is under international protection and hereby with strict regulations. To make a design enhancing the values of the heritage and without harming it is always the top priority. Human interventions within the protection zone should be avoided. Changing the agricultural production model by introducing saline agriculture and double dike systems is a long-term proposal which involves negotiations and public participation.

6. Feedback and Response

I had a discussion with my mentors about the research outcomes and the idea of making a set of strategic design toolbox was declined. Instead of making a generic design toolbox which is not site-specific, it is more meaningful to have a design driven by the site context and address the particularity and the uniqueness of the area.

The materials for the dike reinforcement could be considered in the proposal and further research is needed to see where and how the materials could come from within the region for the sakes of circularity.

Design assessment could also be taken into account in the final part of the project. Therefore, a preliminary design assessment with a list of assessment criteria is discussed with Mark. However, there are limitations on the assessment. For instance, the double dike system is still a relatively new concept and lacks experience in implementation and assessment on the environmental impact to the landscape. The effectiveness of the salt marsh on coastal flood protection is controversial due to the future uncertainty. The assessment is only considered as a preliminary one and would not discuss in detail in the project.

7. Limitations, lessons and recommendations

After the nine-month-research, the major accomplishment is the practice of ‘research by design’ and making design decisions on multiple scales. The studio has trained me to think with maps and landscape processes in which I could integrate into the design. Narrative is also important for expressing and delivering the focuses of the research and design, engaging people in the project as in a story. The Wadden Sea Lab worked in a very small group of people, therefore the research process is inefficient whereas the scope of the research is insufficient. But working in a small group allows me to focus on individuality and we always have sufficient time to discuss every week.

The research started with the topic of ‘water’ which involves the brackish water as well as the freshwater in the river basin and bosezem systems in Friesland. My interests in the landscape processes along the coast have driven me to focus on the flood management of the sea water. The design proposal would become more coherent and inclusive if the flood management in the river basin is also part of the scheme. Moreover, the project only took one location for the small-scale interventions. Working on several design locations could demonstrate a variety of interventions and the implementation of the design strategies comprehensively.