

# A3U105 Graduation Orientation; Graduation plan

## Between sea and land

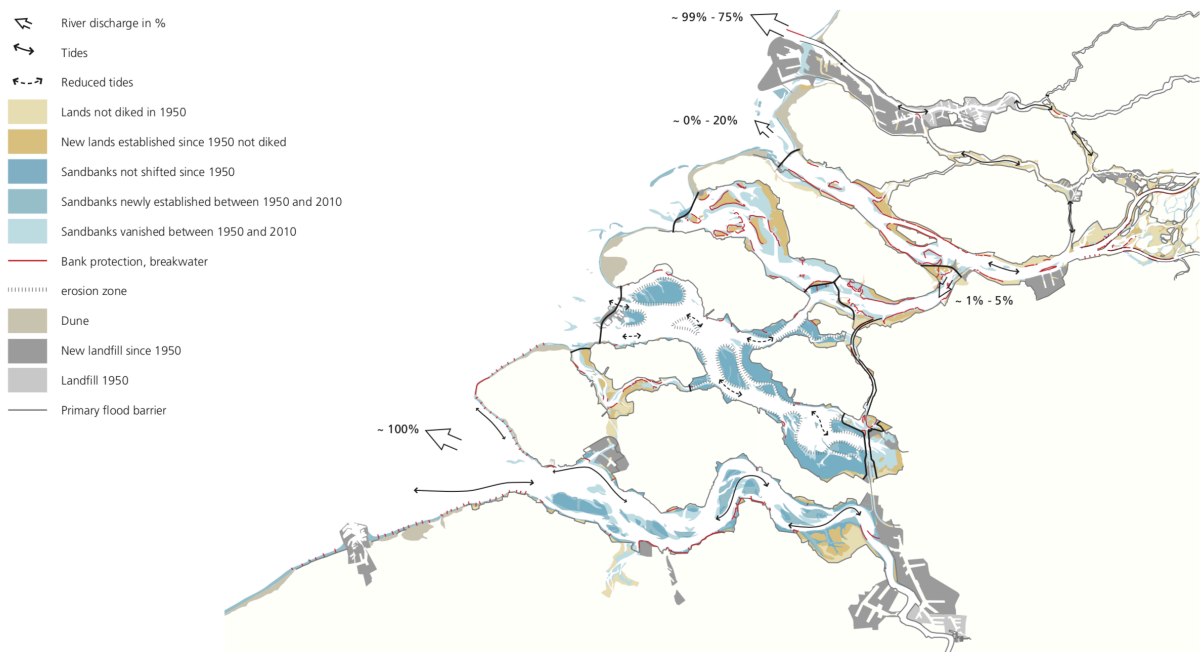
*Building with nature to sustain, secure and improve the island of Schouwen Duivenland.*

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2nd mentor: Nico Tillie

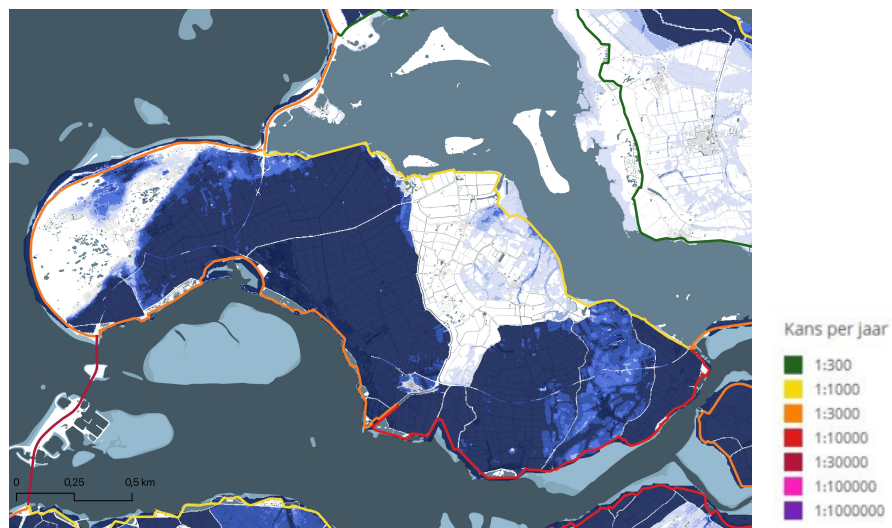
Keywords: *open delta, nature based solutions, climate change, biodiversity, flood risk*

### Delta dynamics

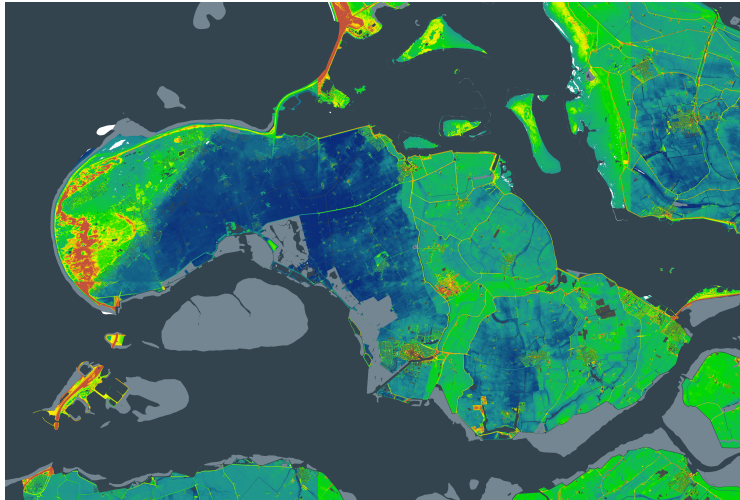


map from: *nieuwe perspectieven voor een verstedelijkte delta* (Meyer, Bregt, Dammers, & Edelenbos, 2014)

### Water safety Schouwen duivenland



## Height map Schouwen duivenland



## Literature

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Meyer, H., Bregt, A., Dammers, E., & Edelenbos, J. (2014). *Nieuwe perspectieven voor een verstedelijkte delta: naar een methode van planvorming en ontwerp (Editie 1)*. Must stedenbouw B.V.

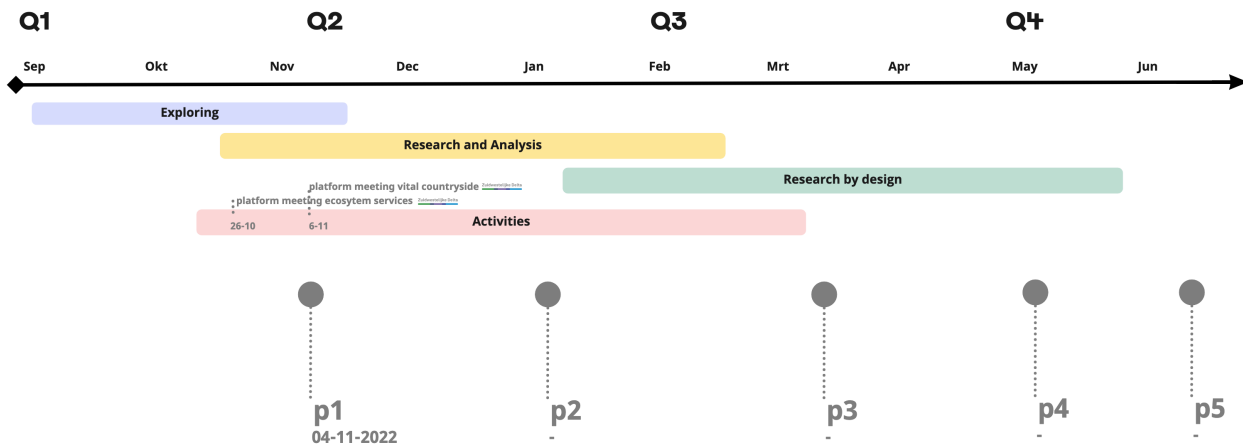
Kernteam Rijk-regio Gebiedsagenda Zuidwestelijke Delta 2050 & OAK-Strootman Landschapsarchitecten. (2020, November). *Gebiedsagenda zuidwestelijke delta 2050*. Ministerie van Infrastructuur en waterstaat en Gebiedsoverleg Zuidwestelijke Delta. Retrieved from [https://www.zwdelta.nl/app/uploads/2022/03/gebiedsagenda\\_zuidwestelijke\\_delta\\_2050\\_interactief.pdf](https://www.zwdelta.nl/app/uploads/2022/03/gebiedsagenda_zuidwestelijke_delta_2050_interactief.pdf)

Poppen, J., & Bijl, M. (2007, September). *Waterplan Schouwen-Duiveland*. Retrieved from <https://docplayer.nl/38633782-Waterplan-schouwen-duiveland-26-september-2007.html>  
Programmabureau Zuidwestelijke Delta, team Lange Termijn Verkenning. (2011, September). *Lange termijn verkenning zuidwestelijke delta*. Retrieved from <https://repository.tudelft.nl/islandora/object/uuid%3A936cd9d7-d1c6-469b-9a7d-33abefa33944>

Haasnoot, M., & Diermanse, F. (2020, September). *Analyse van bouwstenen en adaptatiepaden voor aanpassen aan zeespiegelstijging in Nederland*. Deltares. Retrieved from <https://www.deltaprogramma.nl/documenten/publicaties/2022/09/29/analyse-van-bouwstenen-en-adaptatiepaden-voor-aanpassen-aan-zeespiegelstijging-in-nederland>

# Graduation trajectory

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## Motivation

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When I was 3 years old we moved to the island of Schouwen-Duiveland. The former windmill that was build in 1724 in Brouwershaven became my new home. I've had a wonderful childhood. The landscape was full of adventures as we could play outside all day long.

Due to all the storms I have been I learned to understand the power of nature. When the wind is in your face and you're standing in the vast landscape of water and land it makes you feel fragile, humble and it makes your own problems become small in comparison. At the same time I learned the power of working with nature. For instance, when I was sailing with my father and little brother on the North sea and it was wild. Up to 6 meter high waves were pushing us forward, the wind in our sails gave us power in the water to steer. As we worked with natural forces and didn't fight it but found our place, 'riding this storm', we made it home.. What came to me is, that if you give space and acceptance to the forces of nature, there is a sweet spot where you can make use of these extreme forces.

So as I grew up on the island of Schouwen-Duiveland, I have always had this respect and understanding for natural forces and what you can do with it.

When I came to the university and learned about the impacts of climate change I was always drawn to the upcoming issue of sea level rise. I know what water can do, and how vulnerable we are. You could say, we tamed the sea, resisted it, set it to our hand, pushed it back in a box just big enough to control.

But in the future, due to climate change, this box won't be big enough. So we need to start thinking on how we can deal with the system we created, while at the same time cope with the required additional space resilience of the system requests. How can we live more in balance with water? How can we keep living on in the delta while give space to nature?

My motivation for writing this thesis is a result of the pressure our near future gives us and the need to do things different this time. I want to explore if there is a way where the delta becomes more open and dynamic, and therefore more adaptive, while we still will be able to stay living, working and recreating in it

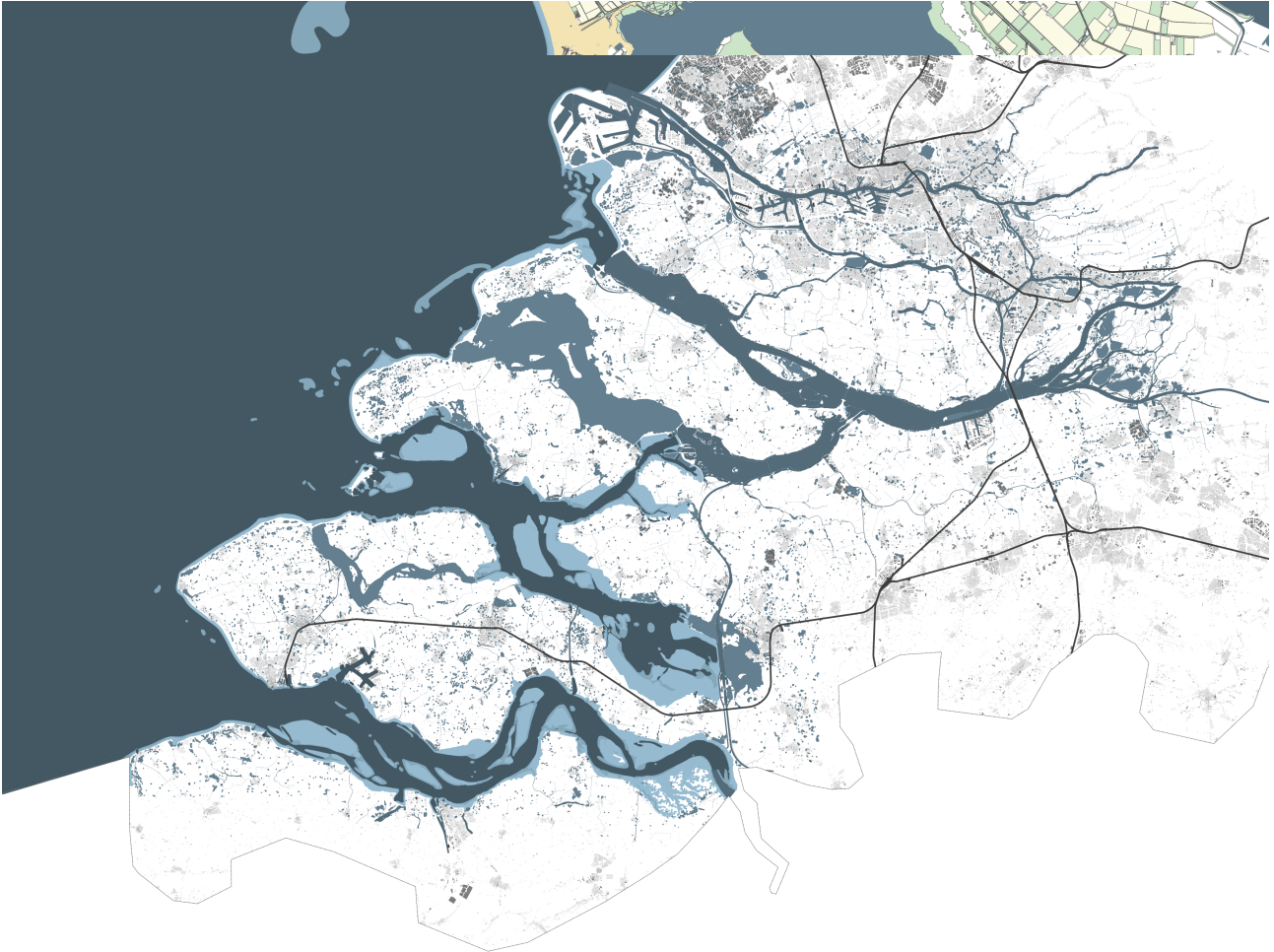
## Location of graduation project

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Zuidwestelijke delta as system and zoom in to the island of Schouwen Duiveland

Aim of study

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This masterthesis is focusing on the Southwest delta in the Netherlands. On this scale the aim is on the water system and the effect climate changes has on this system. Aswell as how the delta as system can become more biodiverse and adaptive.

I want to zoom in on the most Northern island of Zeeland, Schouwen Duiveland. On this scale the aim is to look for potential solutions to adapt to climate change in ecological friendly way.

Where humankind is part of the ecosystem instead of consumer.

For the whole thesis I want to investigate and design on how we can live safe in the delta while promoting the ecological value of the estuarium.

My master thesis is gone be a combination between design/planning and environmental/technology ecology orientated thesis.

Main preliminary research question(s)

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***What would the return to a (semi-) open delta mean for Schouwen-Duiveland, and how can existing qualities be sustained and secured, while new opportunities be added?***

Subquestions

*What are the exiting qualities of Schouwen Duiveland?*

*How can these qualities be sustained and secured?*

*What is a (semi-) open delta?*

*What new opportunities and threats give a (semi) open delta for Schouwen Duiveland?*



How can the green blue structures of Schouwen Duivenland be improved while the water safety is secured?

### Intended concrete outcomes

- spatial vision for the whole island of Schouwen Duivenland
- Key locations where the cracterstics of the spatial vision are shown



### On the border of SWEET & SALT

- research based design towards the adaptivity of the Southwest Delta -

Development Vision for 2100



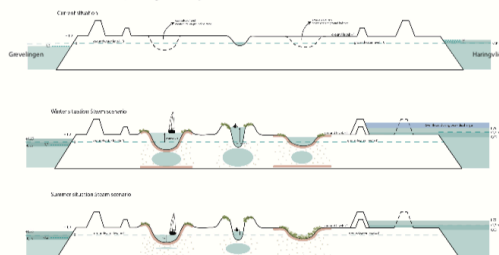
Development vision for the island in 2100 when a 5-Stream scenario occurs, the river Haringvliet will be completely salt during parts of the year, which is a threat for agriculture. Therefore a self-sufficient fresh water system will be developed, making use of the existing creek system, the old harbour canal and waterstorage in the polders. Excess rain water in winter will be stored on the island, above as well as under the ground, so in summer the water can be used again for irrigation of the agricultural lands. This new watersystem based on the substrate layer will become the structure carrier of the occupation layer, to give Goeree-Overflakkee a new economic-strong future, based on tourism and recreation. By adding 'gradients' transitions between land and water the island can become dynamic and diverse again. So in the end the delta will return to a previous state, where biodiversity and ecology were the main characters.

Regional design of No-Regret intervention



No-regret intervention: New center of town and recreation, based upon the existing harbour canal of Dirksland. The water canal will become the new point of departure to discover the island with a key role for the village of Dirksland. In that way some pressure will be released from the coastal area on the 'head' of the island and carrying capacity will be created for facilities in the existing villages.

South - North Island section, showing the watersystem



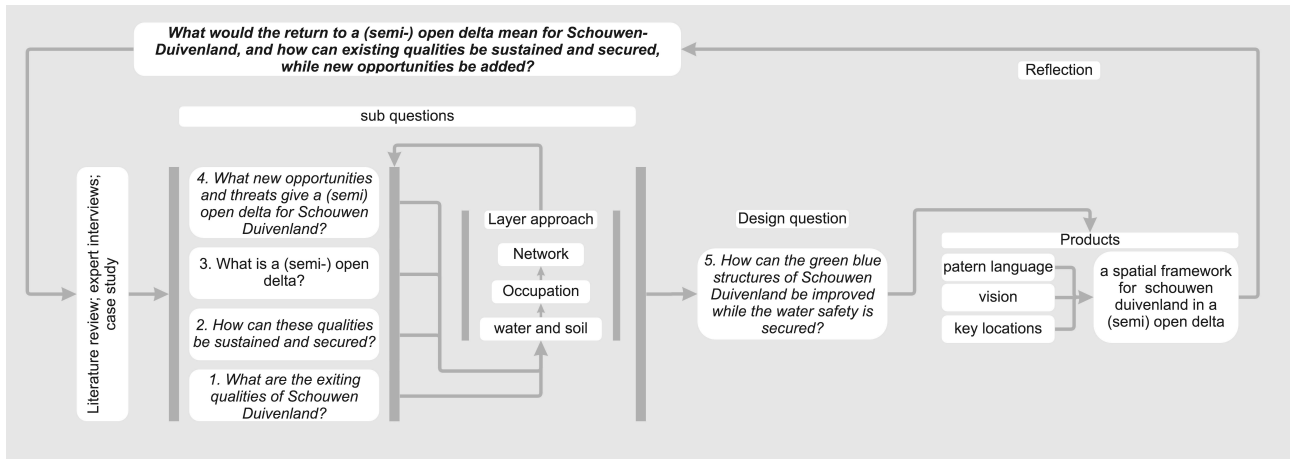
Dirksland



(Janssen, 2015)

## Indication of possible preliminary project approach

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## Scientific relevance

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Deltas are with there fertile soils, there rich biodiversity and geograficliy cracestics a hotspot for population growth. 500 million people live in delta and costal urban regions. And this number is expected to be dubbed in 2050. Climate change will be primary expressed through water and there fore deltas are especially venerable to the effects. All though the climate adaptation of deltas is just starting. (Diaz, 2022) Patrick Verkooijen, CEO of the Global Center on Adaptation (GCA) says *“In the race to adapt to climate change, deltas currently stand at the starting line. A lot of work must be undertaken to address adaptation in deltas, and we have to begin by understanding just how valuable these environments are as biodiversity hotspots and engines of economic growth, and just how gravely threatened they are by climate risks,”* said Patrick Verkooijen, CEO of the Global Center on Adaptation (GCA).’ (Diaz, 2022)

Deltas need a interdisciplinary approach for climate adaptation due to its complexity and the multiple actors who are depending on the delta. Therefore this graduation project aims to combine landscape architecture, urbanism and engineering. The focus of this thesis will be on the island of Schouwen Duiveland. This area hasn’t be in much attention in design research.

Diaz, G. (2022, October 18). The Delta Blues: Why Climate Change Adaptation is Crucial in the World’s Deltas. Retrieved 28 October 2022, from <https://gca.org/the-delta-blues-why-climate-change-adaptation-is-crucial-in-the-worlds-deltas/>

## Societal relevance

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The island of Schouwen Duiveland lies in the green-blue centre of the southwest delta embedded in the strongly urbanised belt of Rotterdam and Antwerp. The urbanised belt of the delta has a higher flood risk prevention number than the islands in the delta. This is because of the economic value and population difference. A flood in a high urbanised area gives more economical damage and more lives are at risk. (Pieterse, Knoop, Nabielek, Pols, & Tennekes, 2009)

This also means that the islands are more vulnerable to climate change because they are less protected. So for all life on and around the islands is a need for research in climate adaptation. There is more attention on the scale of the full southwest delta for climate adaptation than there is on small scale. There is a need to make the consequences of adaptation to climate change spatial on local scale. This can make clear what can be done to make life on the islands of the southwest delta possible for future generations. This master thesis aims to focus on the spatial impact of adaptation to climate change for the island of Schouwen Duiveland

Pieterse, N., Knoop, J., Nabielek, K., Pols, L., & Tennekes, J. (2009). Overstromingsrisicozonering in Nederland (978-90-78645-30-6). *Planbureau Voor De Leefomgeving*. Retrieved from [https://www.pbl.nl/sites/default/files/downloads/overstromingsrisicozonering\\_in\\_nederland\\_webpdf.pdf](https://www.pbl.nl/sites/default/files/downloads/overstromingsrisicozonering_in_nederland_webpdf.pdf)

## Reflection

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The different studio cover a broad variation of approaches and themes. Which would have stirred the graduation project in different directions.

### Design of the urban fabric

When I would have made my master thesis under the studio of design of the urban fabric. I would have started with tracing the existing urban fabric of the Southwest delta. Later I would have done the same with the island of Schouwen Duiveland. This would have led me to understand specific urgencies, potentials and constraints of island.

Schouwen Duiveland is mainly nature, agriculture and villages. This makes that looking at the urban fabric may not result in understanding the potentials, urgencies and constraints of the island because I didn't have looked into the non urban. Now I looked at the island from the greater position in the system and what effect climate change will have on this system and therefore on the island.

### Transitional territories

If I would have made this master thesis under the studio of transitional territories my project would have been more three-dimensional. I would have focused more on the atmosphere, surface and subsurface. My design direction would have more in the direction of lands that follow the subsurface. Now I also want my design and research questions to answer through the layer approach of soil and water - occupation - network, but in this studio this would have been a bigger influence. In this studio they focus I think also more on the formation of the landscape. The formation of the delta would have been a bigger chapter and would have also more influence on my design. So I think this studio would have also very well fitted my graduation project.

### Planning complex cities

When I joined the studio of planning complex cities, the focus would have been way more on the social network of the delta. I would have been doing more research in the organizations planning the delta and the actors that are involved. Where now this is just a small part of my thesis. What also may have happened is that the focus of my thesis would have been more on the conflicts that arise in the delta due to the distribution of spatial resources and land use. A bigger chapter would have been over the conflicts that arose between farmers and nature organizations. And the struggle between the value of the rich agriculture reclaimed land and giving reclaimed back to sea

to give more space for biodiversity. I still also want this to be part of my master thesis but I a smaller amount.

### City of the future

When I would have written my master thesis under the studio city of the future my this would have been more interdisciplinary. Where now my master thesis is more a combination between landscape architecture and Urbanisme, in the studio city of the future the multi-disciplinary would have been between Architecture, Urbanism, MBE, TIL, Geomatics, and CME. The multi-disciplinary (if landscape architecture would have been added) would have fitted well in the complexity of the Southwest delta. But what is would have missed is the system thinking of the metropolitan ecologies of places studio.

### Ethical considerations

The dutch have for centuries modified the land for personal interest. Where in the beginning nature and water and people lived hand in hand gave industrialization possibilities for exploitation. Technological prosperity made us less dependent form spatial restrictions of soil and water. But is this way of dealing with the land ethical just?  
 If we today look at the construction of the delta works and the change of natural habitat of animal species and the consequences of biodiversity loss it entails, we may argue the ethical justification. In this thesis I want to explore how we can live ethical just in the delta, where ecosystems are no longer a subordinate of humans but humans are participators in the ecosystem.

### Mind map

