

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

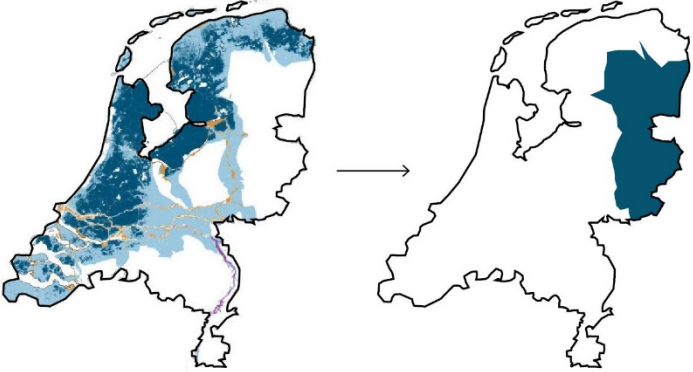


Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

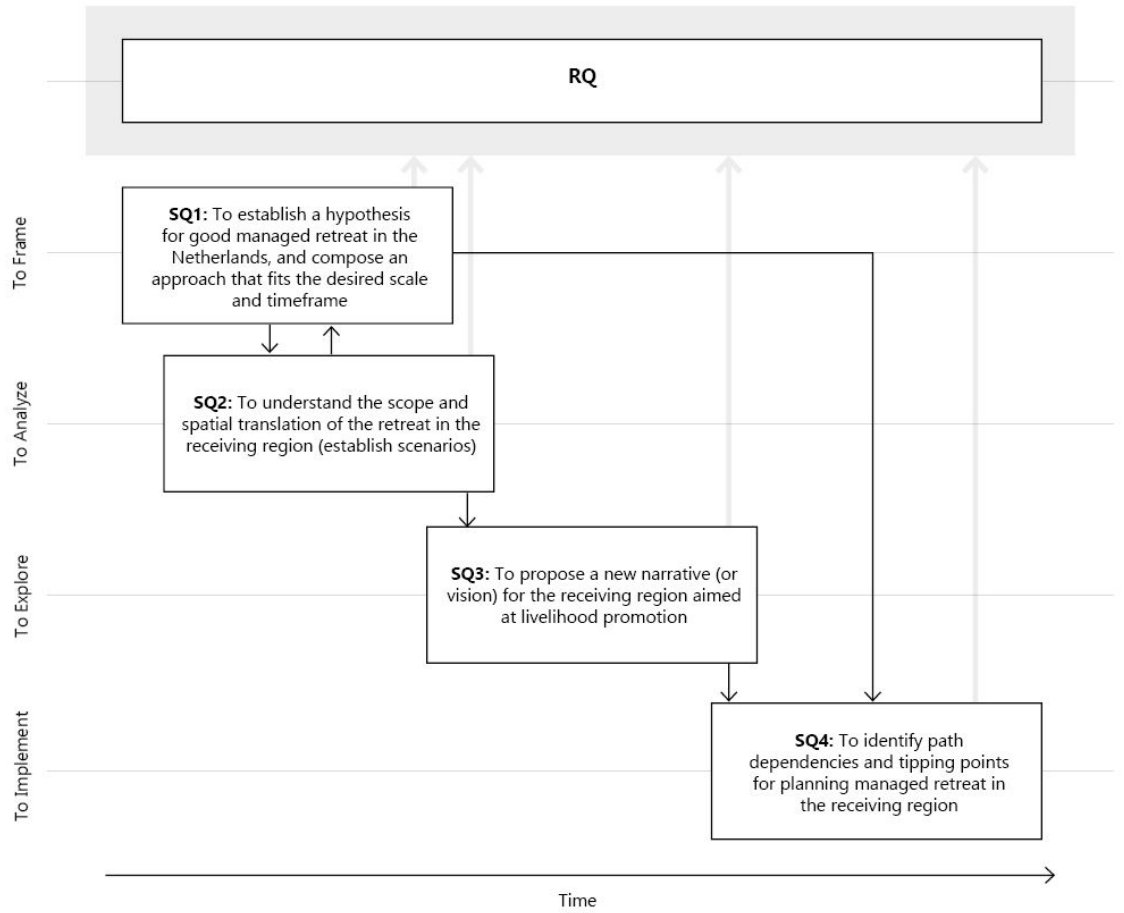
Studio		
Name / Theme	Complex Cities / -	
Main mentor	Verena Balz	Regional planning and governance
Second mentor	Fransje Hooimeijer	Environmental technology and design
Argumentation of choice of the studio	<p>In particular the sub-studio Complex Regions in Transformation aims to unlock greater and timelier societal responses to problems in the built environment in a context of uncertainty and complexity, while maintaining robust, long-term planning rationales at the same time.</p> <p>Considering the planning focus and the time-scalar complexity of managed retreat, the complex cities studio can offer guidance in this regard.</p>	

Graduation project	
Title of the graduation project	Envisioning the High East <i>Moving towards an adaptive strategy for managed retreat</i>
Goal	
Location:	<p>The higher eastern region (receiving region)</p> 
Problem statement	The dynamic delta landscape and the related flood defense strategy has always influenced Dutch population (re)settlement. In addition to this, it has established areas of national focus and has had influence on socio-spatial equity

	<p>within the nation-state. However, while the delta strategy from twentieth century reclaimed land from the ocean and created space (for settlement), the new strategy is likely to return some parts of land.</p> <p>This movement towards a new flood defense strategy signals to a future where a significant part of the Dutch population will experience displacement. This will not only have an effect on the displaced part of the population, but on the Dutch population as a whole as the movement of people does not only suggest a sending region, but also a receiving region.</p> <p>At this point, none of the studies on the future of the Dutch coastline incorporate this human aspect in abandoning parts of the country. However, when looking at the visionary images representing these studies, it does suggest a huge societal shift.</p> <p>40% of the Netherlands, which predominantly encompasses the higher eastern region, is free of direct risk from floods. However, with little threat comes little attention from flood defense strategies and subsequently national policy. At the same time, displacement of part of the population does suggest a new role for the higher eastern region; to protect the population from the rising sea level.</p> <p>This observations results in the following problem statement:</p> <p>In context of the development of a new adaptive flood defense strategy for the Netherlands, there is little attention for population displacement and the effect this will have on areas outside of the Delta regions; the High East.</p>
<p>Research questions</p>	<p><u>Research Question</u></p> <p>What is an adaptive spatial planning approach for managed retreat in receiving regions and how can this be used to promote livelihood?</p> <p><u>SQ1: To Frame</u> What are dimensions and instruments of managed retreat, and how can these be applied to meet the challenges of the prospected retreat in the Netherlands?</p> <p><u>SQ2: To Analyse</u> What are the prospected sending and receiving regions and how will they be affected by managed retreat?</p> <p><u>SQ3: To Explore</u> What are potentials and synergies for the development of the receiving region that focus on promoting livelihoods while also contributing to societal goals?</p>

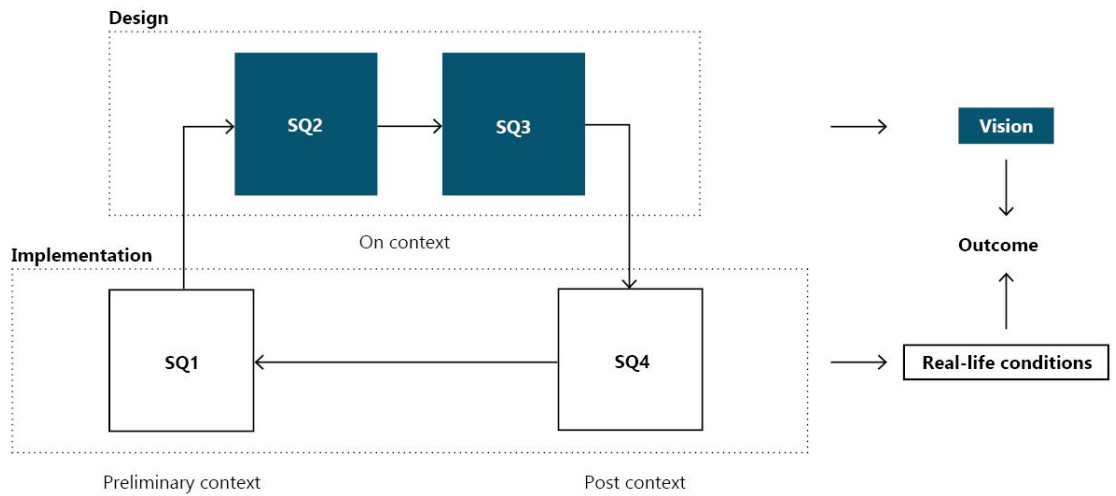
SQ4: To Implement

How can the vision for the receiving region be implemented, considering the scale and time related uncertainty of sea-level rise?



The aims of the sub questions and their relation to each other are illustrated in the diagram shown above.

Design assignment



The design assignment involves a (spatial) vision for the receiving region. This will consist of an inspiring regional map and will go to a smaller scale to look for a design at city and/or neighborhood scale that embodies that vision. This vision is then combined with real-life conditions in order to look at how this desired future can be implemented. Making this combination requires the designers mind in terms of planning. It will result in an adaptive strategy for managed retreat.

[This should be formulated in such a way that the graduation project can answer these questions.
The definition of the problem has to be significant to a clearly defined area of research and design.]

Process

Method description

Literature review and case study analysis

A literature review and case study analysis will establish a hypothesis of good managed retreat (including instruments used; communicative, financial, legal). The literature review will help with finding cases where managed retreat has been implemented, and help assess if these cases are suitable for the prospected retreat in the Netherlands.

Sustainable livelihoods approach

The sustainable livelihoods framework helps to organize the factors that constrain or enhance livelihood opportunities and shows how they relate to one another (Odei Erdiaw-kwasie &

Basson, 2017). It is a framework which has often been used in development-forced displacement and resettlement (DFDR), where people are displaced by development projects such as large dams, transport infrastructure, mines, and urban expansion. Preservation of livelihoods is central to this praxis, which is why the framework is used to a means to 'improve understanding about the dynamic nature of livelihoods and prioritise people, whilst situating their livelihood options within a broad economic and political context' (Wilmsen & Webber, 2015).

A central notion of the sustainable livelihoods perspective, that different households have different access livelihood assets (Odei Erdiaw-kwasie & Basson, 2017). It identifies five livelihood assets; Human capital, Social capital, Natural capital, Physical capital, Financial capital.

The framework is reinterpreted to analyse the livelihoods of the population in the sending region to gain understanding of their values.

3x3x3 system-analysis: Transscalar layers approach over time

Delta Urbanism is an interdisciplinary research program that investigates the possibilities to combine flood protection, soil and water management strategies with urban design, landscape design and spatial planning, aiming to improve spatial forms and structures and innovate urban systems in urban and metropolitan delta regions. As this thesis aims to identify impact of flood defence strategies on the receiving regions, the approaches suggested by the Delta Urbanism program can provide an interesting lens to analyze the High East. One of the research premises of Delta Urbanism is referred to as 'Extremes' and states that the deep uncertainty on the climate crisis introduces a new level of complexity. By exploring the missing means of political, cultural, economic, spatial and technological representation, viable futures in spaces at risk are exposed. The goal of this premises is to 'highlight the urgency for change and put forward visualisations which can drive transitions towards a new territorial order' (Delta Urbanism - About, 2021).

One of the methods used as an analyzation tool, is the 3 x 3 x 3 model. Urbanising deltas are considered to be complex systems which are composed by several sub-systems. The sub-systems can be summarised in three 'layers': the layer of the natural system of territory and water (substratum), the layer of networks of infrastructures, and the layer of occupation (urban patterns, agriculture). The 3 x 3 x 3 system-analysis covers these 3 layers in 3 different periods at 3 different scales. This analysis delivers a basic understanding of the driving forces and the speed of change of each layer, resulting in an understanding of the contradictions, paradoxes, problems, as well as the challenges, opportunities of the future of the region (Delta Urbanism

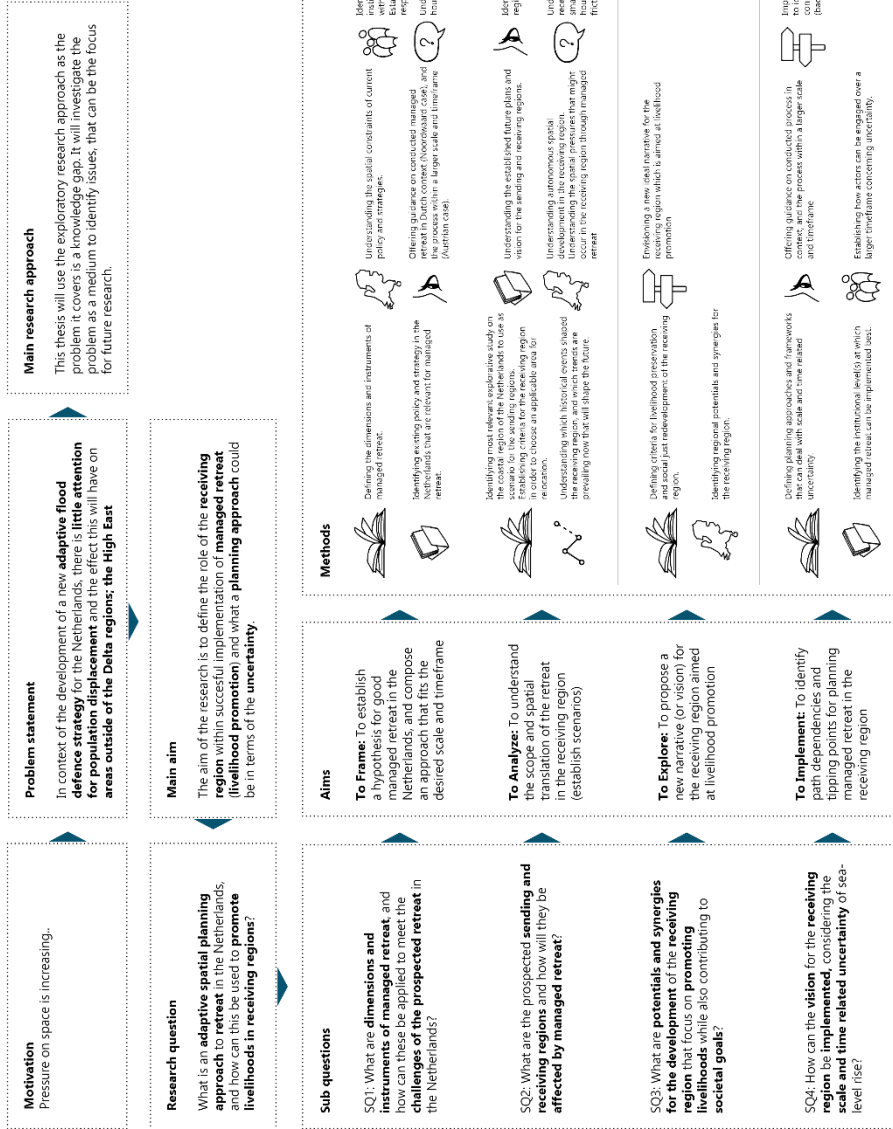
- About, 2021). The approach is used to assess the opportunity the receiving region can offer to the displaced, now and in the future.

Backcasting

Delta Urbanism also stimulates the research oriented approaches to design related to the development of spatial, site and cultural specific design proposals. An example of such an approach is called Backcasting, and aims at describing a desirable future, narrative or vision through the use of design. In this case, this is a vision for the receiving region which focusses on creating opportunity for the displaced. It continues by looking backwards from that future to the present to develop a pathway of actions needed to realize this future (Haasnoot et al., 2013). This result into the identification of adaptive tipping points for the implementation of managed retreat.

Adaptation Tipping Points

Adaptation Tipping Points (ATP) specify the conditions under which the status quo, a policy action will fail. An adaptation tipping point is reached when the external changes accumulate in such a way that a policy no longer can meet its objectives, and new actions are needed to achieve the objectives (Haasnoot et al., 2013).



The methodological flowchart presented above links methods to the approaches.

Literature and general practical preference

Managed retreat

Advisory Group on Climate Change and Human Mobility (2015), Human Mobility in the Context of Climate Change – Elements for the UNFCCC Paris Agreement 2015, available at:

www.unhcr.org/5550ab359.pdf

Ajibade, I., Sullivan, M., & Haeffner, M. (2020). Why climate migration is not managed retreat: Six justifications. January.

Carey, J., & Writer, S. (2020). Managed retreat increasingly seen as necessary in response to climate change's fury. Proceedings of the National Academy of Sciences of the United States of America, 117(24), 13182–13185. <https://doi.org/10.1073/pnas.2008198117>

Ferris, E., & Weerasinghe, S. (2020). Promoting Human Security: Planned Relocation as a Protection Tool in a Time of Climate Change. Journal on Migration and Human Security, 8(2), 134–149. <https://doi.org/10.1177/2331502420909305>

Goodwin-Gill, G. S., & McAdam, J. (2017). UNHCR and climate change, disasters, and displacement. Unhcr, 1–38. <https://www.unhcr.org/596f25467.pdf>

Hino, M., Field, C. B., & Mach, K. J. (2017). Managed retreat as a response to natural hazard risk. 7(May). <https://doi.org/10.1038/NCLIMATE3252>

Siders, A. R. (2019). Perspective Managed Retreat in the United States. One Earth, 1(2), 216–225. <https://doi.org/10.1016/j.oneear.2019.09.008>

Siders, A. R., Hino, M., & Mach, K. J. (2019). The case for strategic and managed climate retreat. Science, 365(6455), 761–763. <https://doi.org/10.1126/science.aax8346>

Stronkhorst, J., & Mulder, J. (2014). Considerations on Managed Realignment in The Netherlands. December 2020, 61–68. https://doi.org/10.1007/978-94-017-9029-1_5

Wilmsen, B., & Webber, M. (2015). What can we learn from the practice of development-forced displacement and resettlement for organised resettlements in response to climate change? Geoforum, 58, 76–85. <https://doi.org/10.1016/j.geoforum.2014.10.016>

Cases for Dutch Coastline

Van der Meulen, G.J.M., . (2020). New Netherlands: Towards transitional flood risk management anticipating to extreme future sea level rise scenarios.

Baptist, M., van Hattum, T., Reinhard, S., van Buuren, M., de Rooij, B., Hu, X., van Rooij, S., Polman, N., van den Burg, S., Piet, G., Ysebaert, T., Walles, B., Veraart, J., Wamelink, W., Bregman, B., Bos, B., & Selnes, T. (2019). A nature-based future for the Netherlands in 2120. Wageningen University & Research, 20. <https://research.wur.nl/en/publications/a6dfaa7c-1c9e-4f77-8334-2ea1702b26b5>

Cases managed retreat

Correa, E. (2011). Preventive Resettlement of Populations at Risk of Disaster: experiences from Latin America.

Hino, M., Field, C. B., & Mach, K. J. (2017). Managed retreat as a response to natural hazard risk. 7(May). <https://doi.org/10.1038/NCLIMATE3252>

Thaler, T., Seebauer, S., & Schindelegger, A. (2020). Patience, persistence and pre-signals: Policy dynamics of planned relocation in Austria. *Global Environmental Change*, 63(July), 102122. <https://doi.org/10.1016/j.gloenvcha.2020.102122>

Thaler, T. (2021). Just retreat — how different countries deal with it : examples from Austria and England. Schindelegger 2019.

Van Staveren, M. F., Warner, J. F., van Tatenhove, J. P. M., & Wester, P. (2014). Let's bring in the floods: de-poldering in the Netherlands as a strategy for long-term delta survival? *Water International*, 39(5), 686–700. <https://doi.org/10.1080/02508060.2014.957510>

Dutch Delta management

Haasnoot, M., Kwakkel, J. H., Walker, W. E., & ter Maat, J. (2013). Dynamic adaptive policy pathways: A method for crafting robust decisions for a deeply uncertain world. *Global Environmental Change*, 23(2), 485–498. <https://doi.org/10.1016/j.gloenvcha.2012.12.006>

Haasnoot, M., Mosselman, E., Sloff, K., Huismans, Y., Mens, M., Ter Maat, K., Weiler, O., Bouwer, L., Diermanse, F., Kwadijk, J., Van der Spek, A., Oude Essink, G., & Delsman, J. (2018). Mogelijke gevolgen van versnelde zeespiegelstijging voor het Deltaprogramma. https://www.deltares.nl/app/uploads/2018/08/Deltares_Mogelijke-gevolgen-van-versnelde-zeespiegelstijging-voor-het-Deltaprogramma.pdf

Haasnoot, M., Diermanse, F., Kwadijk, J., De Winter, R., & Winter, G. (2019). Strategieën voor adaptatie aan hoge en versnelde zeespiegelstijging. Een verkenning. Deltares rapport 11203724-004. 1–65.

Haasnoot, M., Kwadijk, J., Van Alphen, J., Le Bars, D., Van Den Hurk, B., Diermanse, F., Van Der Spek, A., Oude Essink, G., Delsman, J., & Mens, M. (2020). Adaptation to uncertain sea-level rise; how uncertainty in Antarctic mass-loss impacts the coastal adaptation strategy of the Netherlands. *Environmental Research Letters*, 15(3). <https://doi.org/10.1088/1748-9326/ab666c>

Horton, B. P., Khan, N. S., Cahill, N., Lee, J. S. H., Shaw, T. A., Garner, A. J., Kemp, A. C., Engelhart, S. E., & Rahmstorf, S. (2020). Estimating global mean sea-level rise and its uncertainties by 2100 and 2300 from an expert survey. *npj Climate and Atmospheric Science*, 3(1), 3–18. <https://doi.org/10.1038/s41612-020-0121-5>

Meyer, H. (2021). 'Urban configurations in a dynamic delta landscape' in Zonneveld, W., & Nadin, V. *The Randstad; A Polycentric Metropolis*. Routledge: 50-80.

Ministerie van Infrastructuur en Milieu. (2015). Ons Water in Nederland. Nieuw Nationaal Waterplan 2016-2021. Ons Water, 24.

Nillesen, N. L., zum Felde, M., ten Hoeven, H., van Hemert, P., van Alphen, J., Roos, I. (2021). Ruimtelijke ontwerp verkenning gevolgen versnelde zeespiegelstijging.

Sustainable livelihoods

Erdiaw-kwasie, M. O., & Basson, M. (2017). Reimagining socio-spatial planning : Towards a synthesis between sense of place and social sustainability approaches Reimagining socio-spatial planning : Towards a synthesis between sense of place and social sustainability approaches. October 2018. <https://doi.org/10.1177/1473095217736793>

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

The Urbanism track focusses on creating more sustainable futures by integrating social, cultural, economic and political perspectives. It does so through the combination of different disciplines; design, planning and engineering. The graduation project aims to use these disciplines to explore managed retreat and all its perspectives involved, which can be considered a radical move towards a sustainable future.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

Scientific relevance

The thesis has identified a knowledge gap; the lack of focus on the role of the High East within implementation of a flood defence strategy that incorporates displacement of part of the population. The nature of the thesis is explorative and will therefore investigate the problem as a medium to identify issues, that can be the focus for future research. It will examine what the influence of implementation of managed retreat can be on the receiving region. It will offer insight in the potentials and limitations of managed retreat considering a large timeframe and scale.

Societal relevance

Implementing managed retreat on national scale will have a huge societal impact. Considering the potentials, but especially the limitations of managed retreat in a societal context, can help mitigate the negative side effects. Literature even states that the transformative nature of managed retreat can, if carried out well, aid societal goals.

