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:

Personal information	
Name	Josephine Valerie Beger
Student number	6078974

Studio		
Name / Theme	Architectural Engineering	
Main mentor	Mo Smit	Architectural Engineering
Second mentor	Olga Ioannou	Architectural Engineering + Technology Department
Argumentation of choice of the studio	This studio offers a systemic, interdisciplinary approach, that is necessary to rethink architecture as a part of a regenerative system. Focusing on Material loops and territorial strategies matches well with my thesis about paludiculture derived building materials and the SETS model. The studio offered the ideal framework to understand architecture not as an isolated object but as mediator between landscape, society and ecology.	

Graduation project	
Title of the graduation project	"From Swamp to Structure: Toward a Systemic Architecture of Landscape, Labor, and Material"
Goal	
Location:	Köpenickerstraße, Berlin
The posed problem,	The building sector is the most resource intensive sector world wide – responsible for around 37 percent of the Co2-emissions and 40 percent of the global waste (UNEP, 2022) the production chains are mostly functioning linear and detached from ecological processes and regional site conditions. At the same time, the drainage and the conversions of swampland areas – as seen in the Berlin Brandenburg region-

	have contributed significantly to emissions, loss in biodiversity and water shortage. (Nordt, 2021) The concept of paludiculture (productive use of rewetted peatland)- offers enormous potential – both ecologically and materially. Nevertheless, it is rarely considered in architecture. What is missing is a model that systematically combines ecological regeneration, social participation, and technological infrastructure – and translates this into concrete spatial strategies.
research questions and	How can the rewetting of peatland be understood as a systemic model linking social, ecological, and technological dimensions of regional value creation for the constrcution industry of Berlin Brandenburg– and what kind of vision does this enable?
design assignment in which these result.	This project proposes a new way of thinking architecture- not as an isolated object, but as a part of a living landscape. At Berlin's Köpenicker Straße, a forgotten Spree shoreline becomes a testing ground for this vision: a public swimming pool, with the water filtered by a constructed wetland, and a makerspace that transforms swamp plants into future building materials. Architecture becomes a mediator – a space where ecology, craft, and public life intersect. From degraded landscapes to urban resilience: this design is for a post extractive future.

Process

Method description

The research employed a combination of methods: a literature review of academic and policy sources on paludiculture, peatland restoration, and SETS theory; field

visits to a rewetted peatland farm in Brandenburg and the design site in Berlin. An interview with a paludiculture practitioner; GIS analysis using open-source geospatial data to map peatland distribution and current usage in the Berlin-Brandenburg region; and design-based research, including the development of a speculative 2050 scenario for peatland rewetting.

Literature and general practical reference

Gis Maps: Geoportal Brandenburg, Swamp soils

Interviews: Petri, S. (2025, May 20). *Interview with Paludiculture Farmer* [Personal communication].

Selected Literature:

Theories:
Buckton, et al. : (2023). The Regenerative Lens: A conceptual framework for regenerative social-ecological systems. *One Earth*, *6*(7), 824–842. https://doi.org/10.1016/j.oneear.2023.06.006

Hutton, J. (2020). *Reciprocal Landscapes; Stories of Material Movements*. Taylor and Francis Group.

Weiss, R., & Egli, H. (1959). *Häuser und Landschaften der Schweiz*. Rentsch; WorldCat.

Wetland:

Islam, S., & Moatazed-Keivani, D. (2023). *Moore Zukunft des Bauens*. Material Cultures, Bauhaus Earth.

McPhearson, et al. (2022). A social-ecological-technological systems framework for urban ecosystem services. *One Earth*, *5*(5), 505–518.

Paludi culture:

Nordt, A.,et al. (2024). *GUIDELINES FOR IMPLEMENTATION OF PALUDICULTURE*.

Tanneberger, et al F., (2021). Towards net zero CO2 in 2050: An emission reduction pathway for organic soils in Germany. *Mires and Peat*, *27*(05), 1–17. https://doi.org/10.19189/MaP.2020.SNPG.StA.1951

Noordt, A., Schäfer, A., Peters, J., & Wichmann, S. (2022). *Anreize für Paludikultur zur Umsetzung der Klimaschutzziele 2030 und 2050. Climate Change 44/2022*.

Statues:

Nationale Moorschutzstrategie

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)?

My graduation project explores how wetland-based paludiculture can be integrated into architectural value-chains, using the SET (social-ecological-technological systems) model as a framework. This aligns closely with the studio's focus on regenerative design and regional material cycles. As part of the architecture track, the project responds directly to the programmes empahsis on systemic thinking, spatial agency, and enviromental responsibility. It questions material sourcing, landscape engagement, and infrastructure, turning ecological restoration into spatial and social innovation.

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

My graduation project responds to three key challenges of our time: climate change, species loss, and resource scarcity. It proposes a regenerative architectural approach rooted in rewetted moorland landscapes and the practice of paludiculture. Socially, it explores how architecture can foster regional identity, ecological stewardship, and public well-being. Professionally, it contributes to the growing discourse on biobased materials, circular construction, and site-specific design strategies. Scientifically, it builds on the SETS (Social-Ecological-Technological Systems) framework to analyse cross-scale interactions and inform integrated spatial solutions. The project will offer a prototype for future building cultures that are both climate-resilient and culturally grounded.