MINING
CLAIMING

TRANSFORMING THE POST- MINING LAKESCAPE INTO A RESILIENT CULTURAL LANDSCAPE IN MITTELWESER, GERMANY

BY OLIVE LOK YAN WONG

Sand is the Earth's most heavily extracted resource, primarily for construction purposes. This extraction involves digging below the groundwater table, forming large groundwater lakes as a post-mining landscape. Typically, these lakes are left abandoned for nature's reclamation.

However, this project in Mittelweser, Germany, challenges this convention by intervening before the negative consequences of mining occur and looking at the industrial process of mining through the lens of a landscape architect. This proposal prompt positive transformation by curating a post-mining cultural landscape that brings new activities, climate resilience and cultural identity to the local community, which has contributed its land and materials to the society.

TOP
Photo of operating sand mind in Mittel-weser

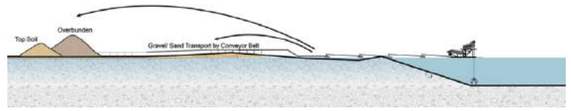
BOTTOM
Illustration of the sandy beach in a post mining landscape

TOP Landscape mining master plan
BOTTOM Soil extraction area plan, 1998

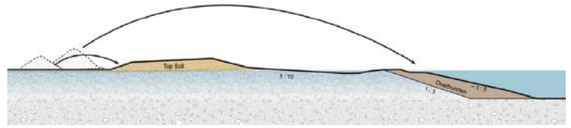
TRANSFORMING POST-MINING LAKES INTO A LANDSCAPE INFRASTRUCTURE

The Mittelweser floodplain is the largest sand extraction region in northern Germany. Mining activities excavated below the groundwater table, creating groundwater lakes as post-mining landscapes. Since the 1970s, the agricultural land has been gradually transforming into expansive lakescape, covering 500 hectares of groundwater lakes. The mining areas follows the soil extraction plan made in 1998 in which one third of the proposed area are currently mined. Projections indicate that lake areas will be doubled by 2035 as mining continues. However, the expansion of post-mining lakes has led to groundwater depletion, resulting in the desiccation of farmlands. Coupled with an increase in flood events along the river Weser, the region is facing a growing climate challenge.

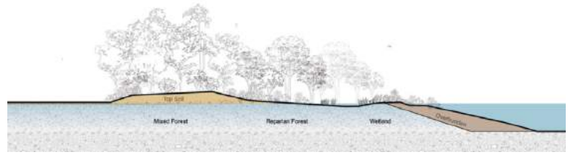
Given these challenges, the project proposes an alternative landscape framework that enhances climate resilience while utilizing only 50% of the current mining plan to address concerns regarding arable land loss. The new landscape structure scatters and connects the groundwater lakes with existing ditches to collect rainwater, expands forest patches along the lakes to form riparian detention areas, and introduces small sealed irrigation ponds for the dry season. Such approach transform the once-isolated mines collectively into a performative landscape infrastrucure in connection with the existing blue green system.The composition of the landscape is aesthetically guided by farming plots, creating a cultural landscape that showcases the enhanced geological dynamics of the river meander with flexibility in implementation.



To Cut (Mine Operating)



To Fill (Mine Closure)



To Cultivate (Mine Rehabilitation)

UTILIZING THE MINING PROCESS AS A LANDSCAPE PROCESS

The project leverages the mining process as a methodology to shape the landscape, developing the “Cut-Fill-Cultivation” model that evolves the mining operation, closure and rehabilitation procedures. This design and construction methodology is tailored to the unique characteristics of the mining landscape and effectively integrates the mining process into designing and constructing the post-mining landscape. However, current practice focuses on stabilizing mine edges using limited slope ratios of 1:2 to 1:5. By incorporating a greater variety of water edges and slope ratios, the project creates riparian zones that respond to groundwater level fluctuations, providing diverse habitats, recreational opportunities for both humans and wildlife.

TOP
The “ Cut- Fill - Cultivation’’ landscaping / mining model

BOTTOM
Zoom in Landscape Plan of a curated groundwater lake

TOP
Illustration of the riparian wetland

BOTTOM
Illustration of the orchard garden and sand playground

CURATING A POST-MINING LAKESCAPE INTO A RESILIENT CULTURAL LANDSCAPE

One of the project's key aspirations is to reveal the underground materials that the community has contributed and allow them to be enjoyed by the community once again. To realize this vision, the project incorporates materials sourced directly from the site, where the mining industry returns a portion of the materials they extracted for rehabilitation purposes. Furthermore, local farms offer additional resources, including bricks, timber, and wood chips, which further enrich the project's material palette. The material from mining and farming became a design inspiration and origin of the new programmed wateredges. It creates the Sandy Beach, Brick Terrace, Rocky Shore, Willow Strips and Riparian Wetland.The five water edges together create the Lakeside Edge Park.

The resulting post-mining cultural landscape is distinctly rooted in the region's rich agricultural and industrial history. I imagine villagers can come together at the edge park, sitting in the sheltered gravel plaza, watching kids play in the sand playground ,surrounded by the blossoms of cherry trees. Celebrating the beauty of growth and harvest with each other's company. The park features a moisture gradient, ranging from wetland areas, riparian woodland and further transitioning into the existing mixed woodland and the drier cropfields. These diverse and interconnected habitats are crucial for enhancing biodiversity and providing protection against floods and soil erosion. This design transforms the landscape from one dominated by agriculture to a more climate adaptive ecosystem.

TOP
Illustration of the rocky shore

BOTTOM
Material palette re-claimed from mining and local farms

RIGHT
Illustration of the brick terrace

LEFT
Aerial view of the designed post mining landscape and QR code of Flyover Video

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REIMAGINE POST MINING LANDSCAPE AS ASSETS RATHER THAN LIABILITIES

The mining of sand, a heavily extracted material, has resulted in the creation of large water bodies that are typically left to nature's reclamation. However, through creative landscape design, these post-mining landscapes can be transformed into multi-functional landscape infrastructures that enhance climate resilience and provide new identity, programmes and ecology to the local area. By utilizing the mining process to develop a " cut- fill- cultivation " design and construction model, a more diverse edge environment of the post-mining landscape can be created, benefiting both people and wildlife.

The proposed project in Mittelweser, Germany serves as a model for other regions grappling with the impact of mining activities on their landscape. It is a call for a new perspective on post-industrial landscapes and an opportunity to reimagine them as assets rather than liabilities.