

The Living Lab for Mud Two Years Later: Update on the Ongoing Pilots that Integrate Sediment Management and Building with Nature

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Introduction: Throughout the world, different coasts, shores, lakes, and rivers have to deal with excess sediment or sediment shortages. The natural balance between the erosion and deposition of sediment is disrupted by human interventions such as dams in a river, port developments in an estuary and dredging activities for the maintenance of existing ports and waterways. Disruption of the natural balance creates areas of sediment starvation (i.e., coastal erosion) and areas of sediment abundance (i.e., siltation in harbors). Human developments and natural ecosystems are directly affected by this sediment unbalance, with implication on industrial activities (e.g. navigation, logistic and tourism industry); space for living, flood safety and impact of climate change (e.g. loss of coastal areas and more frequent flooding) and food security (e.g. loss of productivity). Optimizing sediment management by integrating human developments into the natural sediment cycle is one of present days' greatest challenges as well as greatest opportunities. Sediment is therefore potentially a precious resource, not a waste.

Methods: Based on the existing demand for integrated and beneficial sediment use, in 2017 EcoShape has initiated the Living Lab for Mud (LLM). The LLM binds (fines) sediment management and Building with Nature (BwN) to improve knowledge and demonstrate practical nature-based solutions regarding management, use and reuse of (fine and soft) sediments. The LLM is a true physical international lab that consists of a series of pilot projects in the Netherlands and abroad that tests specific BwN concepts (Figure 1). These pilots cover the entire range from sediment in suspension to sediment as building material, embedding ecology, operations as well as socio-economic considerations.

Results and discussion: This presentation follows on what presented at the 2017 SedNet conference in Genoa, providing a status update two years later.

Since 2017 three pilots started with construction and monitoring (Clay Ripening, MarkerWadden and Maconi), with the first results becoming available. This presentation will focus therefore on the new ongoing pilot providing an overview of the latest development and an outlook to the future.

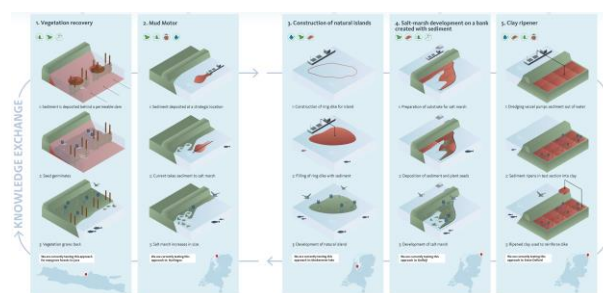


Fig. 1: Representation of the 5 LLM concepts that are tested in five pilots. From the left: Vegetation recovery in eroding coastal areas, Pilot Building with Nature Indonesia; Strategic disposal of dredge sediment for salt marshes development, Pilot Mud Motor; Construction of natural islands from natural dredge sediments, Pilot KIMA MarkerWadden; Develop salt marshes from sand and mud, Pilot Marconi; Producing clay soil from dredge sediments, Pilot Kleirijperij. Generic knowledge regarding fine sediment physics, project implementation and governance is developed within each pilot. The knowledge and experts network are shared across the pilots. Image by EcoShape, 2017.

References:

EcoShape (2017) "Living Lab for Mud". Infographic flyer produced by EcoShape. <https://www.ecoshape.org/uploads/sites/2/2017/10/EcoshapeA3A4-GB-4-4versie1.pdf>.