

**Technical session**

**SUSTAINABLE PORTS IN AFRICA  
A PRACTICAL STAKEHOLDER-INCLUSIVE, ECOSYSTEM-BASED  
DESIGN APPROACH**

*Chair: Jill Slinger*

**Key words: sustainable ports; environment; social awareness and responsibility; ecosystem-based design; knowledge diffusion**

**Paper 1: Towards a framework for integrated, ecosystem-based port development**

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This paper describes an integrated, ecosystem-based research project exploring what it means to be a sustainable port in a developing country context. Africa is one of the few areas in the world where greenfield port development is still occurring in addition to brownfield development. This means there are many challenges and opportunities to design for sustainability and to nudge existing ports towards more sustainable activities. A stepwise, case study oriented approach to tackling these issues is explicated in an effort to understand the advantages for port developers and their financiers to move in this direction.

**Paper 2: Designing for stakeholder values in port development in Africa**

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This paper addresses the need for stakeholder-inclusive design in sustainable port development. This involves learning about the values and knowledge resources of local stakeholders at an early stage, but is a step that is often omitted in current port planning processes. However, it is essential in creating added value and in avoiding costly delays when port development is stopped or delayed by social impact findings at a later stage. A stakeholder engagement process for the Port of Tema, Ghana, is used to illustrate the types of activities required and offer insights in the outcomes. In particular, a game structuring method applied in a 50-people workshop in February 2017 demonstrated that the expertise of local stakeholders and insight into their preferences regarding potential futures for the port city and its surroundings can inform planners, port authorities and engineering scientists about what it means to be a sustainable port in a developing country context.

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**Paper 3: The contribution of nature-based concepts to sustainable port development**

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The potential added value of ecosystem-based concepts in port design are explored using a series of examples from the Netherlands and Ghana. The first example relates to the sandy dunes comprising part of the protection of the Maasvlakte II extension to the Port of Rotterdam. The second example focusses on enhancing the habitat suitability of bed protection, while the third example addresses improved connectivity and potential restoration of a brackish wetland adjacent to a recent harbor extension in Africa. The paper illustrates that the design of nature-based infrastructure requires a focus on opportunity creation and restoration of healthy ecosystems. Healthy ecosystems, in turn, help to ensure that benefits accrue to local as well as regional and global stakeholders in a port development process.

**Paper 4: Diffusing knowledge on Sustainable Port Development**

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This paper adopts theory on pilot projects to devise a strategy for the diffusion of new knowledge and practices from case study research on an African port. Progress in disseminating knowledge and in creating awareness of new practices is reviewed. The efficacy of the strategy is also assessed.

**Why this session/workshop will be interesting/ useful for the conference attendees?**

It is envisaged that this technical session will provide participants with the insight in a port design process that starts from a different point (stakeholders and ecosystems) and delivers added value both in the short and long term.