INTEGRATED AND SUSTAINABLE PORT DEVELOPMENT IN GHANA WITHIN AN AFRICAN CONTEXT

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Key features and innovations Maasvlakte 2

• Working/building with respect for nature
• Stakeholder inclusive & co-creation of values
• Integrated adaptive design
• New knowledge
• Green growth
Part of the Future co-creation

The Port of the Future takes the natural system into account through an ecosystem-based approach with the aim to optimize economic, environmental and social aspects of the port's location, design and operations. This requires a co-creation between engineering, ecological and socio-economic perspectives and actors to be able to come to a sustainable, green, and efficient port.

Creating ports serving economic, environmental and social needs, requires the combination of different disciplines such as coastal morphodynamics, high and dynamic techniques, civil engineering, and land knowledge of the physical environment of the location, socioeconomics, ecology and governance. When these different disciplines are interconnected and being integrated, they have the potential to reach strengthening in coastal design, healthcare and working with nature policies and effective governance. To develop a Port of the Future, the unique competences assessed, risk or assessment and vulnerability monitoring. Deltarres, the knowledge institute of Delft University of Technology and the world-wide fund for Nature (WWF NL) combined their specific fields of expertise to develop the Port of the Future concept.

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The sustainable port

“A sustainable port is a port which has achieved and is maintaining a balance in economic, environmental and social extent for the surrounding local region. A sustainable port uses the Earth’s resources for its own benefit without affecting its capacities for future generations.”

The sustainable port planning process

“A sustainable port masterplanning is a continuous learning process which is designed to create a balance in economic, environmental and social extent for the surrounding local region. This can be achieved by including the location choice in the overall port design process, while through early, transparent stakeholder involvement and the consideration of long term uncertainties, flexible and future-proof development and operation can be achieved.”

Ref.: PIANC - IAPH EnviCom WG150
“Sustainable Ports, A Guide for Port Authorities”
Integrated and Sustainable Ports in Ghana in an African context

Project features

• Balance between morphological, economic, ecological and social processes

• Interdisciplinary co-creation with African stakeholders

• Bottom-up approach from practical cases into tools and a generic framework
Lagoon under pressure

Eroded and stone protected beaches

Overcrowded fishery port

Existing port

Area new port development
Workshop in Accra-Tema Ghana, Juli 2015
Integrated and Sustainable Ports in Ghana in an African context

Project partners

- TU Delft
- University of Ghana
- UNESCO-IHE Delft
- WUR / Imares
- VU - Amsterdam
- Deltares
- WWF
- NABCC (Netherlands African Business and Culture Council)*

Budget 700,000 euro (4 postdocs (0.5), and researcher from Ghana, 3 years)
Proposal approved start project May 2016.

* Boskalis, Van Oord, IHC, Damen Shipyards, Port of Amsterdam, Deep BV, STC, FMO, CWT Sitos
Project outcomes

• Framework
  • Best practice guidelines for implementing integrated and sustainable port development in Africa
  • Scientific papers

• Tools
  • Quick design tools using remote sensing data and integrating ecological data
  • Tried and tested methods for stakeholder-inclusive port planning, which can include the Ports of the Future serious game

• Green Ports Africa Network
  • A community of researchers, private sector practitioners and port-related stakeholders
Research Planning and Management

- Building the research team
- Detailed work plan
- Research integration
  - 1st Research Integration Meeting 13 May 2016
  - 2nd Research Integration Meeting 26 August 2016
- Planning
  - Regular RIM’s (last Friday of each month)
  - Post-doc skypes on the next Monday to follow up on agreements
  - Stakeholder workshop in Ghana in early February
Ports in Africa – building the research team
Research Plan

African Context

- Pan-African Ports, Harbours, Shipping Networks
- Ghanaian (Port) Development

Environment

- Ecosystem
- Society / Stakeholders

Harbour design

- Prototype port design
- Refining & testing
- Final Ghana port design
Research Integration

• 13 May 2016
  • Work plan as basis
  • Clarified cross-linkages, & identified integrative elements within & across the sub-projects:
    1. Storybook
    2. Coastal Morphology e.g. Coastal Erosion and Port Layouts
    3. Eco-enhancement of hard structures
    4. Ecosystem, as the provider of Ecosystem Services
    5. Ecosystem Services
    6. Governance & Institutions
    7. Game-structuring methods
    8. Hinterland connection

• 26 August 2016
  • Information needs between tasks
  • Sustainability as port governance process and the status/condition of a port
  • Integrative products – Storybook & 1st scientific article

T₀ Existing port (status quo)
T₁ Proposed expansion (standard design)
T₁⁺ Incremental value addition (green port)
T₁++ Out of the box (green port ++)

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Planning & the Theory of Change

- Integrated, interdisciplinary, stakeholder-inclusive and bottom-up research approach
- Regular research team meetings
- Grounded in the case of Tema port expansion in Ghana
- To demonstrate the added value of sustainable designs and serve as a catalyst for other port projects in Africa
Questions?