Deltas in Practice, policy-practice sessions

Deltas in Practice, Theme 4: Green Infrastructure / Building with Nature

DP 4.3 Green solutions for resilient cities

Co-Chairs		Arnoud Molenaar, City of Rotterdam, the Netherlands Jane Madgwick, Wetlands International, the Netherlands
Organised by		Dr. Chris Baker, Wetlands International, the Netherland
Presentations	•	Jane Madgwick, Wetlands International, the Netherlands
	•	Bregje Wesenbreeck, Deltares, the Netherlands
	•	Pieter de Greef, City of Rotterdam, the Netherlands
	•	Ibrahim Thiam, Wetlands Internationals
	•	David Waggoner, Waggoner and Ball Architects, USA
Session topic	•	Besides traditional grey solutions in deltas, green solutions can cope with climate change aspects, such as intensive rainfall, drought and increasing water levels in sea or rivers
Objective of the session	•	To share best practices on planning and the realization of green infrastructure and to determine an agenda for developing of green infrastructure in both rural and urban situations. This agenda has to include solutions and conditions for their practical realization.

Main conclusions and lessons learnt from the presentations

Jane Madgwick starts the session by explaining the aim and programme of the session. She emphasises on the challenges of Building with Nature in cities and that the session should result in the development of an agenda that can help to build capacity for incorporating Green Infrastructure solutions.

Bregje Wesenbreek presents how cities adapt to climate change by using green infrastructure. Flooding occurs due to pluvial, fluvial and coastal flooding. A graph shows the relation between available space and occurring risks for both grey and green infrastructure. When space is available, green infrastructure appears to be the most effective option. Many small scale green solutions in cities achieve great results. Bregje advises involving multiple stakeholders and including green infrastructure in developing integrated plans. An app has been developed with green solutions: See http://v-web001.deltares.nl/bgd/bgd/site/index.php/map/show

Pieter de Greef emphasises the importance of cooperation in realising Green Infrastructure. In Rotterdam, a coalition of willing stakeholders shares knowledge and budget to develop green water fronts. A combination of benefits such as water quality improvement, biodiversity, growing food, recreation and liveability, stimulates cooperation and co-funding . The Green Port project starts in October 2014 and plans are being made for green water fronts in the near future.

Ibrahima Thiam presents the case of Saint Louis in Senegal. This delta is important for ecology and agriculture, but is threatened due to erosion, flooding and competition for water. A major breach has occurred for which solutions are urgently needed. There is little capacity in the city to handle this currently. Ibrahima presents the cooperative plans for restoration of 35 hectares of mangroves as a pilot. The plans includes commitment of the community, prevention of costs of hard infrastructure, an increase of benefits and a sustainable development.

The fourth presentation is by David Waggoner. He presents the experiences of the city of New

Orleans in relation to water management. Problems with flooding, land subsidence and critical water assets occur. Integration of green infrastructure with public space and infrastructure gives interesting benefits using innovative landscape planning and design. Green infrastructure can store / detain excess rainfall.

Main conclusions of the discussion

Green Infrastructure competes with hard, traditional infrastructure solutions and creates diverse opportunities. The discussion sets up an agenda for promoting Green Infrastructure (GI):

1. Improve awareness of decision makers, planners and politicians e.g. by developing a tool to help visualize the benefits of green infrastructure
2. Communicate co-benefits and cost efficiency of GI
3. Communicate GI's long term maintenance approach and costs
4. Share knowledge and best / worst practices, e.g .the Copenhagen model of 300 GI projects
5. Analyse and communicate the development of business cases; including how to derive life cycle costs, benefits and value creation
6. Specify design and engineering principles to underpin development of tailor made solutions
7. Make master plans in which GI and spatial planning are integrated
8. Stimulate students in order to create a new generation of architects, engineers and ecologists
9. Work with major engineering firms and consortia such as Building with Nature to develop the case for GI / Stimulate partnerships of engineers, architects and ecologists
10. Determine chances for GI with new contracts
11. Link GI to prevention of land subsidence
12. Stimulate a Green Infrastructure network for advocacy
13. Arrange exchanges and study tours for politicians and city administrators to inspire them

Main result or conclusion of the session

GI offers multiple advantages for climate adaptation in cities, compared to traditional hard civil engineering solutions, including cost-effectiveness and multiple societal benefits. It needs strong and active promotion to become mainstream. A green city is attractive for everyone making co-creation and co-funding feasible. Integration of green infrastructure in new or reconstructed public space projects, makes cities adaptive to pluvial, fluvial and/or coastal flooding and drought. Architects, civil engineers, citizens, companies, contractors, administrators, decision makers and other stakeholders have to cooperate in developing knowledge of cost-benefits-value analyses, risks, business cases, technical and ecological performances and sharing best practices.

Most exciting insights or outcomes

- Life cycle costs could be reduced using Green Infrastructure
- Civil Engineers have to support Green Infrastructure
- Several cities are already convinced and willing to share knowledge
- Green Infrastructure provides ecosystem services and revenues
- The session (topic) was very popular and the audience was diverse in terms of sectors, expertise and geographies