



DELTAS IN TIMES OF CLIMATE CHANGE II

INTERNATIONAL CONFERENCE

OPPORTUNITIES FOR PEOPLE, SCIENCE, CITIES AND BUSINESS
 ROTTERDAM THE NETHERLANDS, 24-26 SEPTEMBER 2014

Deltas in Practice, policy-practice sessions	
Deltas in Practice Theme 3	
DP 3.2 Creating floating cities: A dream or a new perspective for the future of the planet?	
Chair	Dr. Rutger de Graaf, Rotterdam University of Applied Sciences, the Netherlands
Organised by	Dr. Rutger de Graaf, Rotterdam University of Applied Sciences, the Netherlands
Presentations	<ul style="list-style-type: none"> ● MSc Bart Roeffen, Blue Revolution Foundation, the Netherlands ● Lasse Birk Olesen, Seasteading Institute, USA ● MSc Floris Boogaard, Tauw, the Netherlands ● Leander Ernst, Rotterdam University of Applied Sciences, the Netherlands ● Kunié Adeyemi, NLÉ Architects, Lagos, Nigeria
Panel	<ul style="list-style-type: none"> ● Rick Heikoop, Rotterdam University of Applied Sciences, the Netherlands ● Gerard van Zomeren, Arcadis, the Netherlands ● Jan Willem Roël, FlexBase, the Netherlands ● Corazon Dee, Institute for Housing and Urban Development Studies, the Philippines
Co-reference	<ul style="list-style-type: none"> ● Mark van Ommen, Floatbase, United Kingdom
Session topic	<ul style="list-style-type: none"> ● Floating cities: several initiatives and projects from all over the world are presented, compared and discussed
Objective of the session	<ul style="list-style-type: none"> ● The objective of this session is to share different visions of floating cities and to compare initiatives and projects, highlighting their potential
Main conclusions and lessons learnt from the presentations	
<p><i>Blue Revolution: Floating cities and their potential for coastal cities, Bart Roeffen</i> Bart explains that cities' major challenges nowadays are to cope with urbanisation and flood risk/climate change. Since we will need land for food and bio fuel in the future, we may well lack land area the size of North-America in 2050. The blue revolution aims to make better use of 2/3s of the earth surface: its water. The thought is that we can be more efficient in production, e.g. since water as a source is right there. Bart also introduces the concept of cyclicity: recycling urban waste emissions as resource. A case study in Rotterdam shows that by properly using algae the city could create 32% of its fuel need, 66% of its need for vegetables and 63% of its need for animal proteins such as fish with the waste of the city. The potential is huge. An idea would be to use the older smaller harbours for this purpose, starting by building smaller pilots and scale up in the future, perhaps even moving towards the ocean. Audience from Jakarta reflects that this method could perhaps also create new land with less effect on the environment. Audience from Copenhagen wants to inspire the participants to think out-of-the-box and work with urban planners, e.g. on the question how to connect old and new towns.</p> <p><i>Floating Cities: Opening Humanities Next Frontier, Lasse Birk Olesen</i> Lasse changes the discussion and explains us "how building floating cities could bring political change". Technology takes many steps towards a sustainable future, but politics' last innovation was perhaps establishing the US... He explains the need to change incentives and have political innovation. He also explains that inventions usually or perhaps always come from experiments, not from scientific discoveries. The main reasons for the lack of political innovation are the differences between industry and</p>	





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government related to customer lock-in and barrier-to-entry. His idea is to experiment with politics by creating new empty (floating) land in the oceans, first near-by the coast, then outward in international waters. This would be an incredibly exciting possibility for us to innovate. He explains that floating cities would not necessarily have to be completely self-sufficient and uses examples to show floating cities are a real possibility. The Seasteading institute does research and is now working on the first floating city (with a relation to its host country much like Hong Kong has with china). Several thousands of people have already shown interest in living on it. Lasse responds to questions from the audience by explaining that the Seasteading institute does not have political ideas, but merely wants to make experiments possible. An inland floating city could be a step towards the final goal of cities in international waters.

The effects of floating urbanisation on ecology and water quality, Floris Boogaard

Floris shows us a research that has just started. His research question relates to what the negative and positive impacts of floating urban development on water quality and ecology are. Using a remote controlled drone submarine with several sensors (nitrate, ammonium and oxygen, temperature, pressure and conductivity) he has conducted case studies in several Dutch cities. Results show that the sensors pick-up variations but no large differences between water quality under and next to floating structures. The research will be extended to bigger structures in the future. The research shows a footprint of aquatic life, which is a good indicator of ecology and has also resulted in an online tool www.climatescan.nl to share knowledge on the potential environmental effects among stakeholders all over the world.

Floating Urban Development and Area Development 3.0 in Rijnhaven, Rotterdam, Leander Ernst

Leander describes the different stages of the Rijnhaven development and the current tender. Rijnhaven was built around 1900 and used to be a trans shipment port for transport up and down the river Rhine. Due to the port moving towards the west, Rijnhaven became obsolete and the surrounding area deteriorated. Other former ports faced the same problems, so the city responded with the urban waterfront development Kop van Zuid. Then, the CityPorts Programme was created, which aims at combining both urban and port functions in former city ports and focuses on innovation and sustainability. The original plan for Rijnhaven was to create high-end apartments, offices, design stores and a park next to the water, and on it temporary floating events. After the successful realisation of the Floating Pavilion the city wanted to take floating developments a step further and added 80-100 floating homes to the Rijnhaven plans. However, because of the crisis the land-based developments were cancelled. The city then introduced a tender for a sustainable urban transition of Rijnhaven, but remarkably left out the floating housing. Leander explains that this tender shows characteristics of a re-constellation of a transition in urban area development on a niche-regime level, which may be advancing towards the acceleration phase of this transition. He is interested in discussing the floating houses development being left out of the tender. His question to the audience is therefore: are floating developments means to accomplish sustainable urban areas or are they a goal in themselves?

Mark, who has a similar experience in London comments that stakeholders should be made more important, that building on the boundary of water and land makes a difference and should be taken into account, and that only tendering the use for 30 years means investors stay clear and will not be sufficiently interested. He inspires to think big but start small, so you can experiment and learn by doing. Mark definitely thinks floating houses are beautiful opportunities and not a goal on themselves.





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Makoko Floating School: An innovative approach to address social and physical community needs in view of the impact of climate change, Kunlé Adegemi

Kunlé explains that in the future 70% of the people will live in cities, which are all near water. Cities are our greatest invention but could become our deadliest one. A large area of the African continent is at risk or high-risk of climate change and flooding. During his research together with students at Cornell University, he has looked at African countries using the seven DESIMER factors, which are believed to be the key drivers of development of cities (demographics, economy, socio-politics, infrastructure, morphology, environment and resources). With his office NLÉ, he has created the African Water Cities project, which identifies the top 20 African Cities most impacted by the challenges and opportunities of rapid urbanisation and climate change. The city of Makoko shows people living on the water. He has designed a floating school and also a radio station: they are public buildings for everybody to visit, from either the land or the water.

Main conclusions of the discussion

What can floating cities offer for low cost floating housing in the Philippines and also in e.g. Nigeria?

Rick starts the discussion with a short presentation of a proposed project in Manila, the Philippines. Manila experiences an extreme population growth, climate change and also many typhoons, so it is a very vulnerable city. Moving e.g. 800.000 people away from the vulnerable flood plains, which was a reported recommendation in the Manila delta plan, cannot be a feasible option. The idea of the project is to see if we can reduce vulnerability of these 800.000, mostly poor, people by using low-cost floating development and demonstrate the effectiveness of this method compared to conventional relocation projects. This includes sustainability and environmental issues. The idea is to create self-supporting floating houses with basic installations that are commercially feasible and add floating sanitation units.

Main result or conclusion of the session

Based on Ricks statement conclusions are drawn:

1. The main obstacle for the implementation of floating houses is the need for an integrated approach (which includes ecological, socio-economic and institutional factors).
2. This project could become a showcase for how these problems in the Philippines can be solved; a showcase not only for the Philippines but also for other Asian countries.
3. Floating cities could fit in the local culture, but this local culture is, obviously, always different. The audience explains that e.g. in Jakarta, many resettlement programs are unsuccessful because local culture is not taken into account. Senator Villar of the Philippines responds that the idea of floating houses is not new, but that this projects approach is a more planned approach that includes e.g. waste management. She explains we need to do these projects at a small scale just to see if they can be successful.
4. Jan Willem mentions that people that live on floating structures here in the Netherlands are the rich part of society, whereas in Asia the targeted people are the poor part of society. His company is therefore trying to build floating houses that have a mix of people (both poor and rich).

Most exciting insights or outcomes

- Wubbo Ockels: "We are all astronauts of spaceship earth"
- Bart Roeffen: The potential is huge.





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| • Kunté Adeyemi: Cities are our greatest inventions but could become our deadliest inventions. |

