Session DPFR 4.6: The need for flexibility in engineering systems and processes to deal with climate change: perspectives from the private sector

Date and Time of Session: Thursday, 30 September 2010, 13.00 – 14.45.

Short description of the session topic and the objective of the session

Topic: Exploration of flexible approaches in climate change adaptation of densely populated delta areas.

Objective: How to cope with increasing extremes (frequency, amplitude) and dynamics of the water systems. The conventional methods of protection mostly consist of static defense works. Due to increasing dynamics, at a certain moment the safety margins of these structures will reach their limits. Therefore, there is a tendency to gradually shift towards incremental adaptations of existing structures in combination with enlargement of the flexibility of the system. The challenges and the pro's and contra's of different approaches are explored by the private sector.

Session Agenda and Main Speakers

Session chair: Msc. Ferdi Timmermans, Movares Netherlands B.V., the Netherlands

Main speakers:

- Setting the scene. Prof.dr. Chris Zevenbergen, Dura Vermeer Business Development, the Netherlands
- Inspiration from other domains. Djeevan Schiferli, IBM.
- Flexible solutions in practise. Dr. Marcel Hertogh, AT Osborne B.V., the Netherlands

Referee: Prof. Richard Ashley, University of Sheffield, United Kingdom

Most exciting insight, moment or outcome

Climate change adaptation needs an flexible, incremental, multidisciplinary, multiactor approach. By overlooking current systems and standards, and crossing boundaries great(er) solutions can evolve.

Main conclusions, themes, insights or messages

Chris Zevenbergen:
Setting the scene: we see increasing dynamics and much more uncertainties. Not only in the fysical world, but also in economics. Current flood defence systems are under pressure. Design life time of defences will reach 50% in 2030. Action must start today. Old economic drivers of retail, housing, leisure and contruction are replaced by new drivers e.g. knowledge economy, R&D, entrepreneurship, social economy. Construction will have to focus on improvement of existing stock, energy efficiency, climate adaptation.
New collaborations must be formed between public and private sector to make things possible. Preferably by integral approach (multivalue). Uncertainties can be dealt with by 1) reducing decision making time horizon (lead time), 2) taking small steps (adaptable systems) 2) no regret measures on short term.

Reflection Ashley: path depended, sectoral solutions (provoked e.g. by policy directives) can be a threat for implementing multivalue, multifunctional and sustainable measures. Larger companies should take the lead in new strategies, because smaller companies cannot carry risk.

Djeevan Schiferly:
The world is changing fast, resulting in hypercompetition & commoditization. Because everyting is becoming connected or related, things are becoming complex and even wishes for changes become complex. Things get stuck or become expensive. In IT this problem is tackled by enterprise architecture: introduction of decoupling, standards, guiding principles for design & evolution. Two other learning full developments from the last 20 years are: 1) network communication (which enable self organisation) and 2) swarm intelligence (collaboration is leading to a higher level of development, even if the individual elements are not conscious of these effects, as we see in insects). For governmental organisations especially it is a major challenge to make use of these new forms of communication. Decoupling, standards, guiding principles and self organisation can ultimately lead to robust networking and new forms of organizational behaviour. Several examples are given to illustrate these new phenomena, such as netcentered organisation.
Discussion: flood safety may be one of the last subjects a government is prepared to undergo such an approach or to outsource. On the other hand: Hafencity in Hamburg is a good example that selforganisation and communications systems based on network in stead of hierarchy can be efficient.

Marcel Hertogh:
The Deltaworks in the Netherlands are a good example of a grand design. But it is also an example of a very rigid, not flexible design. Flexible solutions are needed when adapting to uncertain climate change. The approach is characterized by incremental steps which incorporates living with uncertainty and variability. And also by multidisciplinary and multiactor steps. Examples are Overdiepse Polder and IJburg (both in The Netherlands).

Reflection Ashley: The new Deltaprogram can become business as usual (sectoral approach). The new challenge is not to design a sectoral solution but to widen it: e.g. develop an exportable knowledge economy. Try to move from the short term profit thinking, because it will prevent us from other more greater goods or goals. Lateral thinking can be a major tool, but a lot of debate is still necessary.

Key phrases or quotes

Lateral thinking can be a major tool to achieve a greater goal, but a lot of debate is still necessary.

Main recommendations, commitments, proposals, new initiatives or key follow-up actions agreed in the session

Commonly shared recognition of the described phenomena, as well as the conviction that existing methods, structures and approach will not be sufficient.

New protocols and interactive instruments for decision support will be necessary.