

## Delta Session DS 7: Rhine Delta

**Chair** Bouke Ottow, Deltares, the Netherlands  
**Organised by** Otto de Keyzer, Deltares, the Netherlands

### Short summary

During the session, policy makers, policy officers and scientists were brought together. The following points struck attention:

- Policy makers communicate in pictures and events, clear visions; scientists focus on maps, schemes and figures but, in this case, don't put much emphasis on how unique their research is.
- Time horizons differ between policy makers, policy implementers and scientists
- Scientists focus on reflecting on all uncertainties; policy officers focus on eliminating uncertainties to facilitate decision making processes.
- Dilemma between either taking a flexible adaptation path and a need for clear long term decisions on the part of developers
- It is crucial to take into account all (KNMI06) scenarios in decision taking processes as only then the uncertainties in climate change are taken into account.
- Be careful not to be too perfect, uncertainties will always remain.
- How to deal with changing risks at different time scales?

### **Introduction by Bouke Ottow**

We want to hear from policy makers: What do policy makers need from science, how can they effectively deal with uncertainties? ...and we want to hear from scientists some clues for policy-makers how to handle the results from science, including the accompanying uncertainties.

### **Keynote by Lenie Dwarshuis, Representative for the Province of South Holland**

*Title: Climate adaptation time for the Dutch Rhine Delta*

- Though water is a threat, it also provides many (market) opportunities. The history of the Netherlands from the Golden Ages until now exemplifies that.
- The climate is changing, that is no discussion. What is under discussion is the degree and the tempo.
- The people trust the government that it assures the Netherlands is safe and will be in the future.
- With the Deltaworks we learned that the Delta became safe but not sustainable, as the natural system was eliminated.
- Current problems include soil subsidence, salinization, water shortage, scarcity of space.
- We consider re-opening the barriers against the sea.
- There is an obvious need for more space but this cannot be at the cost of safety; casualties are not acceptable.
- Only further investments can assure that our children will be save and a new Delta Program is necessary.
- New deltaplan: 5 important Delta-decisions will be put forward to politicians.

### **Presentation by Jules Beersma**

*Title: Uncertainties in climate projections and hydrological models for climate change studies in the Rhine Basin*

- Climate models give biased results
- For temperature these biases are similar to the expected change in temperature
- For precipitation these biases are larger than the expected change in precipitation
- A bias correction can be applied that corrects for these abnormalities
- The bandwidth represented by an ensemble of climate models is rather large
- The information about climate change is however in the full range represented by the whole ensemble.

**Conclusions:**

- There are large uncertainties in emission scenarios and climate models, and thus in climate model projections (for the Rhine basin).
- Uncertainty in projections is somewhat larger for the far future (2100) than for the near future (2050).
- For the far future, most projections show an increase in MQ in winter and a decrease in summer.
- Uncertainty in extreme discharge projections (like HQ1000) is often larger than for projections of averages discharges.
- The uncertainty in discharge projections for the Rhine basin is large; except for a clear increase in average discharge in winter in the far future, both increases and decreases are projected.
- As a result, one should be careful considering only the ensemble mean change, the majority of the projections or single-model results since this ignores the fact that there is also a (small) probability for a change in the opposite direction.
- The full information is in the full range of climate projections.

**Presentation by Jaap Graveland, Secretary Deltaprogramme Rijnmond-Drechtsteden, Waterdienst**

*Title: Deltaprogramme Rijnmond-Drechtsteden: Towards adaptive water management and spatial planning to prepare for different scenarios of climate change*

- This is 1 out of 6 regional programmes within the Delta Programme.
- Main problems: low-lying and subsiding area in combination with urbanization, salinisation and safety issues.
- On the one hand problems are increasing, on the other high ambitions for development though vague on the long term.
- Important to adapt before disaster strikes.
- In 2013 the Advice from the Steering Committee will be presented and in 2014 a political decision is expected.
- Problem analysis -> regional ambitions -> resulting challenge -> possible solutions -> advice.
- Uncertainty in climate change but uncertainty with regard to economic development is even larger.
- Tendency is to postpone decision, but people and investors need clarity on measures that are going to be taken as soon as possible.
- Dilemma between possible responses in this situation of uncertainty:
  - Postpone
  - Combined measures
  - Robust
  - Flexible
- Dilemma regarding how to deal with uncertainties. On the one hand a need for adaptive path and need for investments to have soon clarity on decisions.

**Presentation by Evert van der Meide, Policy Adviser Province of Holland**

*Water safety policy for spatial planning in unembanked areas in the province of South Holland*

- Detailed provincial decision framework to evaluate if specific unembanked areas are suitable for building.
- Probability of casualties and social disruption is central in this framework
- Climate factor is introduced in decision framework, and there is a need to decide on climate scenario to get this factor clear
- Expects that in 2013-2014 when advice about Rijnmond-Drechtsteden is presented clarity will exist on measures taken in the area so the decisional framework can be finished.

**Comments Jaap Kwadijk**

- Different communication:
  - Dwarshuis: pictures, events
  - Jules: maps, schemes, figures. Did not mention that in Rhineblick best scientists
- Difference in time-horizon: 2050, 2100, 2013

- After 2013 less uncertainties?
- Scientists as aliens
- Jaap's clean figures
- Evert: incredible precise risk calculations
- Questions:
  - Is there any question to be asked to the scientists (by the policy makers)?
  - If Jaap Graveland and Evert van der Meide are doing what they say, is Mrs Dwarshuis convinced that the quality of life is safeguarded?

### **Discussion**

Lenie Dwarshuis: Decision makers of course have many questions, it is the basis for all decision makers. E.g. a 2-week meeting is held with Deltares to formulate questions that are answerable.

Jules Beersma: Do not choose between scenarios! Together they reflect the uncertainties that need to be taken into account.

Lenie Dwarshuis: We have to be careful not to be too perfect; uncertainties will always remain.

Jules Beersma: Uncertainties do change in time and are related to time scales, how can be anticipated on changing risks?

### **Remaining questions by the audience**

- Who are/do you recognize as your partners in addressing the problems of climate change on water management?
- What can be the role of private actors? What scale level? The Rhine in the Netherlands is a sink in relation with Germany.
- Jules: Some consequences of the higher and lower discharges of the Rhine in the future.
- A question about the hydrological models for climate change studies in the Rhine basin: how uniform are the models? Are the models objective?
- How can citizens get/be self-reliant with regards to climate change
- Jaap Graveland: Already now the Maeslantkering is not up to Deltastandard (1 use per 12 years \* 1 failure per 200 times means 1 failure per 2400 years (Piet Rietveld).
- Jules Beersma: Why use many climate models and only one hydrological model? (Piet Rietveld)
- How does the 'strictness' of 16.000 m<sup>3</sup>/s relate to all the uncertainty in the catchment modelling?
- What is an appropriate time horizon for spatial planning/development? And for flood safety? 1/10.000 year? 1/100 years? Sea level rise 0,5 m, 1 m, >2m? (Hans de Boois)
- What sort of certainties are required for policy making? (Hans de Boois)