

GRONINGEN DECLARATION

May 2011, Groningen, The Netherlands

Preamble

About 150 participants from 24 countries attended the 25th European Regional Conference of the International Commission on Irrigation and Drainage (ICID), 16 - 20 May 2011, Groningen, the Netherlands, with a fieldtrip to the northern coastal area of Germany. The conference was jointly organised by the Netherlands and German National ICID Committees. The theme of the conference was *Deltas in Europe. Integrated water management for multiple land use in flat coastal areas*. There were four topics: *Multiple land use, Fresh water management and salt intrusion, Flood risk management and Institutional arrangements and history*.

In total 57 papers were approved for the conference, more or less evenly spread over the topics with some more papers for Topic III. There were 11 keynote presentations, several workshops, a panel discussion, excursions and a social programme. Based on this the following statements were presented and supported by the participants at the closing session of the Conference.

General

(I) Most European countries with flat coastal areas are facing similar problems like: design standards for water management and flood protection provisions are often significantly below the economic optimum, problems with food production due to changes in land use from predominantly agriculture to multi-functional land use, urbanisation and climate change resulting in an increase in rainfall extremes and drought periods.

(II) In analysing the problems of flat coastal areas a distinction needs to be made between effects of human induced changes in land use, like population growth, urbanisation, increase in value of property and land subsidence, and impacts of climate change. With respect to water management and flood protection human induced changes in land use by far dominate impacts of climate change.

(III) Cooperation amongst authorities and other stakeholders, as well as between countries on trans-boundary issues is important for successful development and management of flat coastal areas. Such coordination is often not optimal in practice and generally needs to be improved.

(IV) In a significant number of the papers real innovative approaches were shown. However with several of the cases that were presented more experience will have to be obtained before they can be implemented in practice.

Topic I. Multiple Land Use

(V) Integrated approaches, taking into account different types of land use with their interactions, are nowadays required in land reclamation for urban development, as well as for rural development projects.

(VI) An interesting tool to provide insight in flood risk are risk assessment maps based on topography, hydrology and land use, which are nowadays available in several countries and easily accessible through the internet.

(VII) Public awareness for flood risk is difficult to achieve because calamities don't occur regularly and people tend *not* to follow government advice.

(VIII) To adapt to climate change to sustain agricultural activities in the Netherlands three different landscapes may be distinguished: peatlands, sandy soils and polder areas. Each type of area has its own challenges and need for adaptation.

Adaptation strategies need smart solutions, such as living with water and living on water. Agriculture needs different approaches and high-tech capital intensive farming is one of them. However, the future for continuing agriculture in some of the marginal flood prone areas is bleak.

(IX) In the development of rural areas in the Netherlands the focus of water management has changed from drainage and flood protection in the 1950s to landscape and nature development since the 1990s. Currently spatial planning is guiding water management measures. An integrated territorial approach is being followed to come up with carefully balanced solutions. This approach is successful because, among others, it is based on a participatory process and a multidisciplinary approach. Three instruments are being used in support of the process: *Sketch 'n Match, Virtual Reality and Touch table*. It is important that solutions are tailor-made and supported by stakeholders.

Topic II. Fresh water management and salt intrusion

(X) Most papers described a modelling approach, for example one on the transferability of SVAT model results from field to greenhouse experiments, one on SOBEK modelling and another on the prevention/reduction of salt water intrusion in shiplocks.

(XI) There was an interesting paper showing research results on the possible disappearance of fresh water lenses in the root zone due to climate change. Adaptation by means of innovative drainage and irrigation methods are considered to be required.

(XII) Several papers have shown and emphasized salinity intrusion as an ever increasing problem, for agriculture, for fresh water intake and other functions of the water system. This will only increase in future, as climate change will cause sea level rise and lower rainfall and river discharge in the dry season.

Topic III Flood risk management

(XIII) In analyses of flood risk management various aspects - hydrological, social, economical, environment, human induced changes in land use and impacts of climate change - and potential measures - flood risk reduction, flood protection (of urban areas), flood forecasting and warning, preparedness and after care - as well as their optimal combination need to be considered. A multi criteria analysis can be a useful part of investigations.

(XIV) The presentation on the Kokemaenjoki River Basin in Finland showed the risk of ice jams. In northern countries these risks are expected to increase in the next decades. Surprising is that due to global warming and related variations in temperature more ice jams are expected.

(XV) It was stated that there is no need for new technical concepts but especially increased awareness of flood risk is important. However, it remains hard to create awareness and we tend to underestimate psychological aspects of a flood. We should better learn from disasters. The following was proposed to reduce flood risk in the near future: from flood protection to damage prevention, from sophisticated systems to simple systems, use of a multiple layer (of safety) approach and more accountability for private owners.

(XVI) Several new methods were presented to determine the design standard of flood protection provisions. Present standards have generally been developed based on an economic perspective only with no attention to casualties. To identify if differentiation in design standards would be socially acceptable, views from governments, business organizations, regional water authorities and Non Government Organisations (NGO) would have to be analysed.

(XVII) Several models were presented that were dealing not only with water flow, but also with debris flow and erosion aspects, as well as the impacts of land use on these processes. In most of these models a hydraulic model is combined with a Geographic Information System (GIS, DEM) to analyse the spatial differences.

(XVIII) There is a trend to 'make space for water' or 'room for the river'. When this is not an option, like in densely populated urban areas, there is a need to optimize structural measures, especially for dikes. Several innovative concepts - for example the spatially integrated dike - were presented. Of course, there is the option to strengthen dikes and to improve the bank protection, but in addition it is of importance to consider spatial-multifunctional concepts, like for example using willow trees or mangroves to reduce wave impacts or to design dikes for example integrated with buildings. Such approaches require dialogues between engineers and spatial planners to come to agreement on design, manageability, long-term planning horizon of space occupation and functionality.

Topic IV. Institutional arrangements and history

(XIX) There are evident differences between countries. In Europe substantial investments are being made to restore a more natural situation (though the scale is small in comparison to the original situation), while in emerging countries economic development is considered to be more important than environmental aspects, while it is seen as the way to develop people's livelihoods. Due to this it is important to be careful with projecting ideas on sustainable development of developed countries upon emerging and least developed countries.

(XX) The water management and flood protection agenda is to a large extent dependent on political preferences (e.g. budget cuts in developed countries, political considerations in emerging countries, disputes about trans-boundary issues). Despite environmental awareness, politics determine the water management and flood protection direction. An optimal situation for ecology is often not feasible because of other requirements such as for flood protection, navigation and cost-efficiency.

(XXI) The question has been raised if the EU Water Framework Directive is not too ambitious, or if it is good to have such ambitious goals? For heavily modified and artificial waters the goals can be defined by the member states themselves, which means that measures can be successful. Still, the decisions on required measures will be very hard and actual implementation depends on budgets.