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The Living with Water approach as a Dutch answer towards climate change

Living with Water is a research program based on the following key messages:

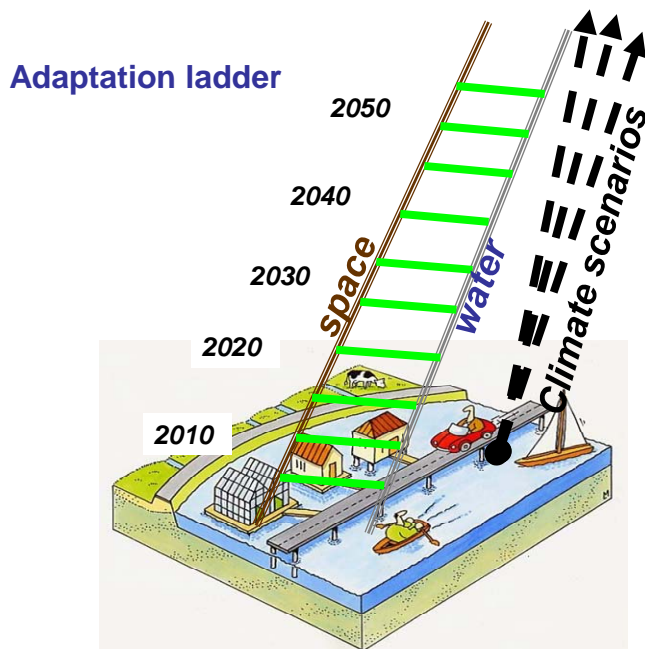
- *Create new space for water;*
in Europe this requires multifunctional land use and a link between spatial planning and water management;
- *Collaboration between technical and social-economical disciplines*
Living with water requires collaboration between all actors in water management, like policy makers, scientists, consultants and last but not least the water manager

Climate is changing and the effects are tangible and in some degree predictable. It will have effect in many ways for all countries and especially for the deltaic urban areas all over the world. Besides a greater change of flooding as sea level rises and river discharges increase, they include the potentially major impacts of drought and the effects of rising temperature on agriculture and nature. The dominant themes to deal with are safety against flooding, living conditions, biodiversity and economics.

The Netherlands with about 15% of European surface is draining about 35% of European water with the rivers Rhine, Meuse and Scheldt. Although we consider ourselves as one of the safest countries in the world, the Dutch realize that a thorough adaptation strategy is needed to cope with the climate change and to keep it safe. Therefore the Dutch government has launched a

large program to keep the Netherlands climate-proof. It is necessary to start gaining experience with integrated approaches, because many forms of adaptation are highly complex to administer. Adaptation requires high investments, but will provide as well changes and benefits.

Uncertainties on climate changes require a adaptation strategy based on a long term vision built on short term flexible steps. Each step should have a short term benefit for society and a contribution for the long term creation of climate-robustness. Each step has to be designed in such a way, that it facilitates the next step. This strategy is the so-called adaptation ladder.



In the conference examples will be presented in adaptation strategies for urban areas, the deep polders and the river basins. In urban areas there is more and more attention for water storage on roofs, in gardens, streets, squares and parking facilities. New suburbs are developed with significant more space for water. The deep polders require special attention for the future, especially the fen meadow polders in the Western part of the Netherlands. A new strategy is developed, where the function of the land is adapted to the (natural) water level. Special attention will be given on the symbiosis between water storage and nature. Nature requires

space, water also. Building water storage with nature could be a successful strategy for a contribution to a climate-proof delta.

River basin management, for example for the river Rhine, requires, an international approach. The Dutch adaptation strategy can be explained with the case of the river Waal, the main branch of the Rhine. A regional integrated approach, focussing not only on safety but also on the possibilities for recreation, industry and housing, might be an appropriate adaptation strategy to cope with a river discharge of 18.000 m³/sec and more.