

# Perspectives in Integrated Water Resources Management

Water management faces major challenges to cope with potential global change impacts, and the inherent uncertainties surrounding future developments ([Middelkoop et al 2000](#)). Deltas are areas which are most at risk. Without robust management strategies and adaptation paths, human and natural services in deltas may suffer severe damage and we may be forced into sudden unplanned actions which are far more costly and less appreciated.

In 2001 the study "Integrated water management strategies for the Rhine and Meuse basins in a changing environment" identified consistent integrated scenarios of socio-economic and environmental changes in the Rhine and Meuse basins, and associated water management policy strategies using the Perspectives method. Furthermore, hydrological changes that may result from different scenarios and management strategies and the consequences for the user functions of the water systems were analysed. With this information the robustness of different strategies under different possible futures was assessed. Since there was no ready-made approach available to achieve this, the project not only addresses issues concerning content: the project is also clearly a methodological exercise. The study was carried out within the framework of the Dutch National Research Programme on Global Air Pollution and Climate Change (NRP).

The final report can be downloaded [here](#). Also a [publication](#) of Middelkoop et al on perspectives in integrated water management.

In 2007 the inception phase of the project 'Perspectives in integrated water management' was carried out. During this year changes of perspectives and transitions in water management were studied. A conceptual framework and project proposal to identify robust water management strategies and adaptation paths for the Rhine-Meuse delta under uncertainty is another result of this project. Furthermore, a prototype of a tool to explore robust strategies under uncertainties and learn how water managers can take uncertainties into account was developed (see picture below). More information on the project in 2007 can be derived at the website of [ICIS Maastricht](#) and in the final [report](#) and [article](#).

Recently we started the follow-up! Download here our [brochure](#) and [poster](#)

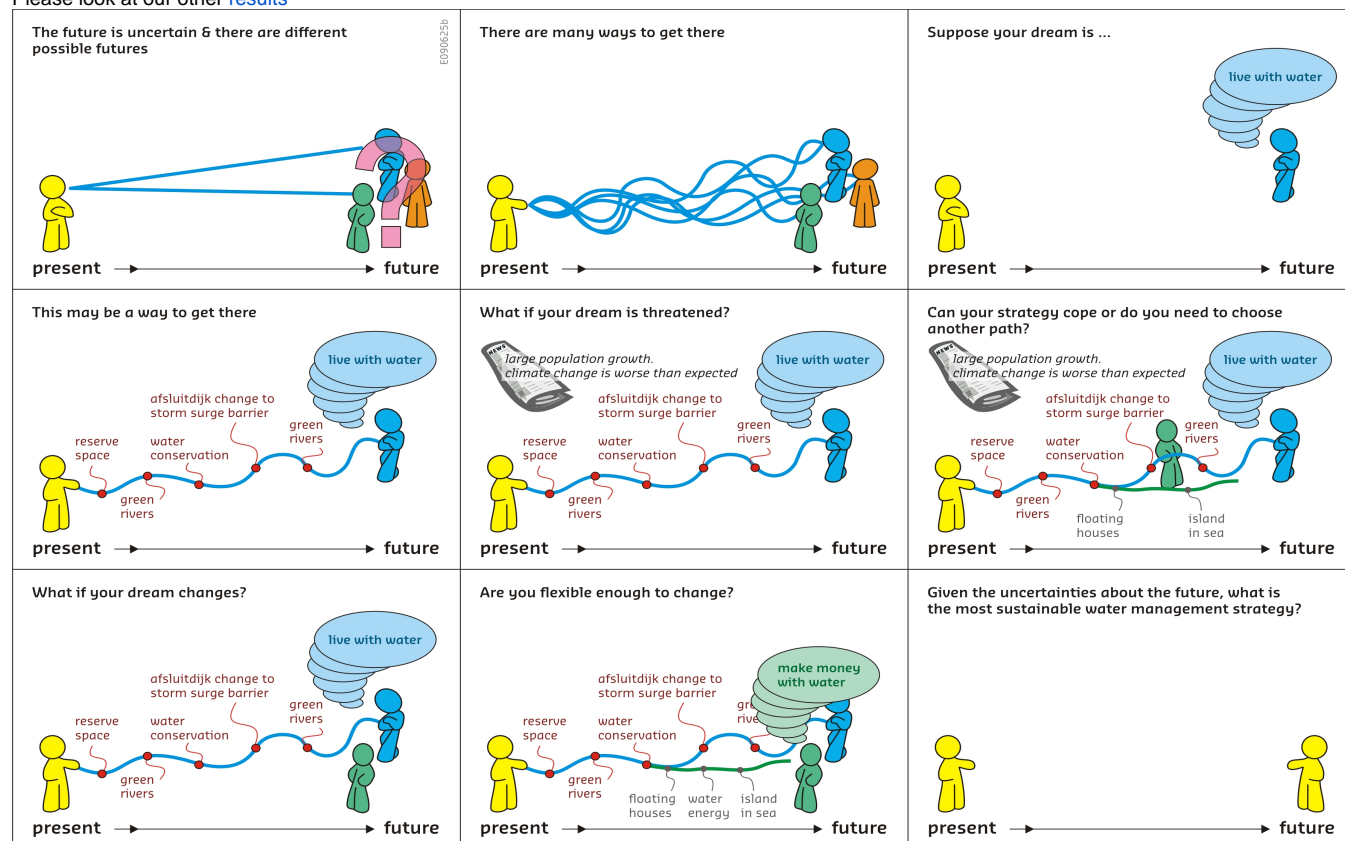
This project has three main objectives:

1. To assess the vulnerability of river deltas for global change;
2. To develop a method to identify robust and flexible adaptation strategies in river deltas under uncertainty, taking into account different possible and integrated scenarios for the physical, socio-economic and social system; and
3. To provide recommendations on how to use this method to define robust and flexible strategies for the river deltas.

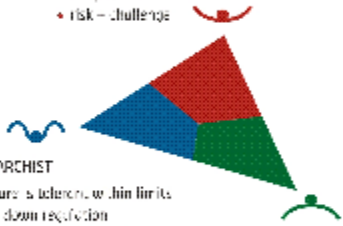
We will do this by:

4. elaborating the method for an hypothetical case
5. experimenting with the method in different river deltas (Rhine-Meuse delta a selected river delta abroad) and
6. comparing the results on perspectives and adaptation strategies.

A description of the method can be found here: [method article 1](#), [method article 2](#)  
Please look at our other [results](#)

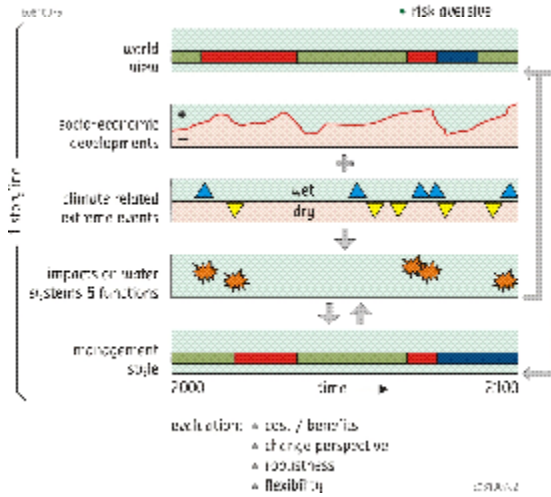


- INDIVIDUALIST**
- nature is robust
  - economic growth
  - anti-regulator
  - market-oriented
  - adaptation
  - risk = challenge



- HIERARCHIST**
- nature is resilient within limits
  - top-down regulation
  - hierarchy and standards
  - risk a-oiding
  - authority through expertise and experience

- EGALITARIAN**
- nature is fragile
  - equity
  - economy as means
  - conscious consumer
  - collective interest
  - risk averse



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