

Challenges in fresh water supply in the Netherlands in relation to the Delta Programme, which is aimed at creating a safe and attractive Netherlands, now and in the future

Neeltje Kielen, the author of this article, is the project manager of the research programme that will deliver the knowledge base for the Delta sub-programme on Fresh Water Supply in the Netherlands. Neeltje visited the USA in January 2011 together with two colleagues from Rijkswaterstaat, which is the executing agency of the Ministry of Infrastructure and Environment, to explore possibilities for knowledge exchange with The California Department of Water Resources, both on operational and policy issues in the field of water management.

The article does not necessarily represent the official views of Rijkswaterstaat nor the Ministry of Infrastructure and Environment.

Dutch water professionals and water managers are quite concerned about possible effects of climate change and not without reason. The Netherlands is a small country situated in the northwest of Europe in the Deltas of the Rivers Rhine, Meuse and Scheldt. Over half of the Netherlands is vulnerable to flooding both from the sea and from the rivers. A quarter of the land is below sea-level and another one-third of the land is prone to flooding from rivers. The country benefits from its strategic location on the coast and its access to some of Europe's main rivers. But the location also poses challenges that are related to changes in sea level and the climate, both threatening our safety and fresh-water supply.

All these concerns notwithstanding, the Netherlands is safe and the fresh water economy is prospering. This is due to our continuous efforts that are put into the upkeep of our flood defence works and water infrastructure. The biggest and best-known sea defense structures are the Delta Works. These were constructed after a major flooding event in 1953. The Delta Works keep the Netherlands safe whilst allowing fresh water based agricultural and industrial activities to thrive. But changes are imminent. Our pollution has grown over the last few decades, the invested capital has increased tremendously and the pressure on our fresh water resources is increasing. Climate is changing, sea levels are rising, while land in large parts of the Netherlands is subsiding. Drier summers and wetter winters are predicted to occur. Extremely high water levels may lead to increased risk of flooding. Drier summers may lead to fresh water shortages and low water levels may impede inland river traffic. Salt-water intrusion may further deteriorate the fresh water resources.

Research has shown that our present infrastructure and management practices will eventually be overwhelmed by predicted changes. When these so called "tipping points" will occur is impossible to predict, as we do not know exactly how quickly changes will take place. But we do need to anticipate and prepare ourselves. Especially taking into consideration that large capital investments and physical interventions may take over 30 years to plan design and implement. That is why the Dutch government decided to set up the Delta Programme, to ensure long-term safety and safeguard economic growth. The Delta Programme sets out what we need to accomplish by about 2050 in order to achieve this goal.

The Delta Programme is divided into 6 regional and 3 generic programmes. The generic programmes cover fresh water supply, safety standards, and new construction and restructuring. A close connection exists between the solutions and challenges of these different sub-programmes. The Delta Commissioner, who coordinates the programme, has the major task to structure the necessary research in such a way that a few major decisions will be taken in 2014 in close relation. These so-called Delta decisions will to a large extent structure the orientation of the subsequent solutions.

For the Programme on fresh water supply the main task is to search for strategies that ensure a sustainable water supply, including the (infrastructure) measures required to attain this. Studies undertaken within the context of this programme should lead to a new long-term strategy for national water supply in 2014. The main challenges for this programme are to search for strategies that will not only support the level of beneficial use we attain at present, but that could potentially also support additional beneficial uses that might arise from opportunities that climate change could bring about. Main policy considerations in the formulation of a new strategy are whether or not the government will fully support all future water uses or expect the water use sectors to provide (part) of their own requirements; what service levels might and could be guaranteed by the government for (future) water uses; and whether water pricing should be introduced or not.

To determine the best strategy a research programme has been set-up. The research follows, more or less, a traditional policy analyses methodology. The main difference being that the research is carried out in joint fact-finding with all stakeholders.

The main steps in this policy analyses are to explore possible bottlenecks when current goals under present water management practices with the existing infrastructure are analysed under possible future conditions – the so-called Delta Scenarios. The scenarios consist of autonomous climate and socio-economic changes. A second step is to formulate new goals based on visions for the Netherlands in which autonomous changes such as climate change are not only perceived as threats but also as posing opportunities. The difference between the future situation occurring as a result of autonomous change and the strived for situation, poses the challenge. The challenge can increase or decrease in comparison to the bottlenecks depending on the vision and the goals. A third step is to formulate possible strategies to attain the vision. Strategies consist of a set of measures and policy instruments. These measures and policy instruments will be evaluated against a set of criteria and basic values set by the Delta Programme. These values include flexibility, sustainability and solidarity. When the criteria and values cannot be met or it is physically/technically impossible to attain the vision, goals will need to be adjusted in the fourth step. In two or three iterations a preferred strategy and alternatives will be formulated.

In May 2011 the Programme on fresh water supply will present the bottlenecks.

References:

Speech by Mr. Bart Parment, director Staff Delta Commissioner, on the occasion of the APEP delegation visit to MLIT, Japan, November 2010. "The Delta Approach – investing in a safe and attractive future"

The 2011 Delta Programme. Working on the delta Investing in a safe and attractive Netherlands, now and in the future