

COM II Deltas in times of climate change

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Context / Social problem

Deltas are attractive settlement sites. Their fertile soil, presence of fresh water and the proximity of transport routes over river and sea make them an ideal place to live and for economic activities. However, there is a downside: lying in the low coastal zone makes deltas vulnerable to all kinds of disasters like hurricanes and tsunamis. This vulnerability will only increase because of sea level rise as a result of climate change. Till this day we countered the sea and rivers mainly by technical measures. On the short term they are effective but on the long term they have many unpleasant side effects, because they block the natural processes in the delta.

What do we know/not know?

The recent study 'Changing estuaries, changing views' (2004) shows that our Delta Works should not be judged an unqualified success. Given the consequences of the flood disaster of 1953, and seen in the context of the time, the decision to build it was certainly understandable. However, the Delta Works have had major social, economic, financial and ecological consequences, while question marks can be raised about the sustainability of the protection against flooding in the long term. It appears that 'soft' interventions that use the natural dynamics of deltas to respond in a flexible manner to the changes offer greater prospects than 'hard' measures in the form of dams, dikes and flood defences. To this day the Delta Works still a source of new understanding and experience. This knowledge and expertise is unique in the world. In future many countries will have to contemplate what the right answer is to the upcoming climate changes. The challenge for the coming decades is to market Dutch knowledge worldwide.

What is being studied?

System-based measures, using the natural and dynamic forces in a delta, seems to be a more flexible way to cope with climatic changes. Only then can a delta adjust to changing circumstances. We explored the potential for soft system-based measures in deltas all over the world and developed a system that allows interactive exploration of deltas and measures.

The goal of the study is to gain insight into the potential of soft interventions that can respond flexibly to change as an alternative to the harder measures in the form of dams, dikes and flood defences. This potential is illustrated for rich and poor countries, including both ecological and socio-economic aspects, in the following three steps:

1. An inventory of deltas that will in future face the consequences of climate change
2. A review in general terms of how deltas can respond to the expected changes with a 'soft' strategy and what opportunities this presents to nature and the people living there
3. Selection and further study of a few deltas where the Netherlands will seek apply its expertise in soft solutions (marketing)

What are the results?

The result is the development of a number of successful strategies that can be applied in a range of deltas to link economic development to ecological goals. Results are available in the report: "Deltas on the move" to be downloaded from the DELTAS website (<http://ivm10.ivm.vu.nl/deltas/>). In addition the website gives an accessible overview of compiled information on deltas across the World. From this website you can retrieve information on



deltas, on their physical vulnerability to climate change, societal stocks at risk, and potential for 'soft' system-based measures. The interactive DELTAS tool makes it possible to rank deltas for many indicators so that it can be used for innovative system-based delta management.

