Climate Proof Flood Risk Management

Knowledge for Climate

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Knowledge for Climate is a research programme for the development of knowledge and services that makes it possible to climate proof the Netherlands. Governmental organisations (central government, provinces, municipalities and water boards) and businesses actively participate in the research programme. Knowledge for Climate focuses on eight areas, called hotspots: Mainport Schiphol, Haaglanden region, Rotterdam region, Major rivers, South-West Netherlands Delta, Shallow waters and peat meadow areas, Dry rural areas and the Wadden Sea region. An important part of the programme is the Knowledge Transfer. We cooperate with Universities in other parts of the world and stimulate Knowledge transfer within Delta areas through the Delta Alliance.

The programme works with eight consortia doing research on eight themes, one of them being Climate Proof Flood Risk Management.

Climate Proof Flood Risk Management

In coastal plains and river deltas Flood Risk Management (FRM) requires constant adaptation to changing circumstances. The Netherlands has a tradition in such adaptation, as it has coped with rising sea levels and subsiding soils for many centuries already.
Accelerated Climate Change now urges the Netherlands to reconsider its long-term policy for flood risk management. This requires the assessment of which strategic alternatives are to be preferred, not only from a risk reduction point of view, but broader from the point of view of social equity, economic efficiency and ecological integrity.

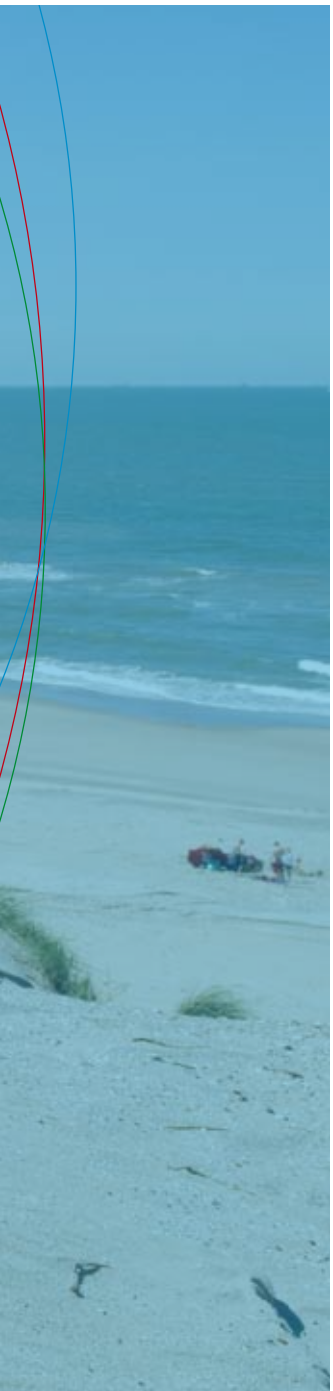
Goal

The research programme aims to support the national, regional and local authorities in their quest for a joint flood risk management and spatial development strategy for the 21st century and beyond. This is pursued by enhancing our common understanding and knowledge on the effectiveness, attractiveness and applicability of individual FRM measures and policy instruments.

Research question

The research programme will:

- develop methods for assessing
  - the effectiveness of technical measures and policy instruments to reduce flood risks
  - the implications of their implementation for urban and countryside environments
  - the robustness (resilience and resistance) of comprehensive FRM strategies in view of uncertainties
- provide guidelines for the design of long-term FRM alternatives and individual measures based on effectiveness (flood risk reduction), robustness and their contribution to the development of entire regions (multi-functional use, natural values and spatial quality)



The Work packages

The research programme contains six strongly linked work packages.
The main research questions of each of these work packages are:

WP1 WP1 questions whether a system of flexible weirs and barriers is sufficiently reliable in a setting of river branches and estuaries with multiple openings to the sea, threatened by both rising sea levels and increased river discharges.

WP2 WP2 investigates the potential of coastal sediment management under the pressure of a rising sea level and possible changing storm regime.

WP3 WP3 provides tools to analyse flood risk in dike-ring settings with 'fail-free' embankments as well as an overview of possibilities for multiple land use in flood protection zones. It will wrap together the wealth of new knowledge and insights from research and practical experience.

WP4 WP4 will improve the knowledge on the effectiveness and possibilities of putting a halt to the increase of economic damage potentials. It investigates the efficacy of flood risk zoning and associated building codes in areas with flood protection and without.

WP5 WP 5 will focus on a review of adaptation strategies in other countries. Key question is how foreign adaptation policies deal with uncertainties of climate change rate and which FRM measures they successfully apply.

WP6 WP 6 addresses the fundamental issues of how to deal with uncertainties and how to co-create societal value in FRM. More specifically it will deliver:

- a concept of robust flood risk systems
- guidelines for the design of flood defences in view of enhancing landscape values
- a vision on the future evolution of urbanized areas in flood-prone deltas.

Research approach

The research programme aims to generate applicable but scientifically-sound knowledge. Applicability in the Netherlands' FRM policy and practice requires a broad, interdisciplinary approach, which we consider a challenge for the consortium as a whole. In this challenge we are supported by a steering committee with representatives from various stakeholders.
The generation of applicable knowledge is pursued by:

- The adjustment of the research programme to the needs of the Netherlands' Delta Programma and STOWA's Delta Proof Programme;
- jointly working on (and in) case study areas where problems are actual;
- sharing knowledge and experience in workshops with stakeholders in the KfC-hotspot areas.

Scientific soundness is achieved by applying state-of the art methods and approaches, but also in particular:

- The involvement of renowned academics and scientists in the consortium;
- the joint supervision of PhD students, who are based in research schools;
- the adoption of common concepts and frameworks, such as risk, effectiveness, and robustness;
- regular scientific discussions.

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Stakeholders

- Delta Programme
- STOWA (Applied Water Research)

Working with Hotspots

- Hotspot Rotterdam region
- Hotspot Major rivers
- Hotspot South-West Netherlands Delta
- Hotspot Wadden Sea

Consortiumpartners

To develop the scientific and applied knowledge required for climate-proofing the Netherlands and to create a sustainable knowledge infrastructure for managing climate change

Consortia Knowledge for Climate

- Climate Proof Flood Risk Management
- Climate Proof Fresh Water Supply
- Climate Adaptation for Rural Areas
- Climate Proof Cities
- Infrastructure and Networks
- High-quality Climate Projections
- Governance of Adaptation
- Decision Support Tools

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This research programme is co-financed by the Ministry of Housing, Spatial Planning and the Environment (VROM).