



Netherlands Environmental Assessment Agency

Global assessment of the costs & effects of adaptation on different scales

Delta Conference 2010
session DP FE 1.2

Marloes Bakker, Willem Ligtoet,
Joost-Jan Schrande, Joost Knoop, Arno Bouwman, Peter Cleij and Hans Visser



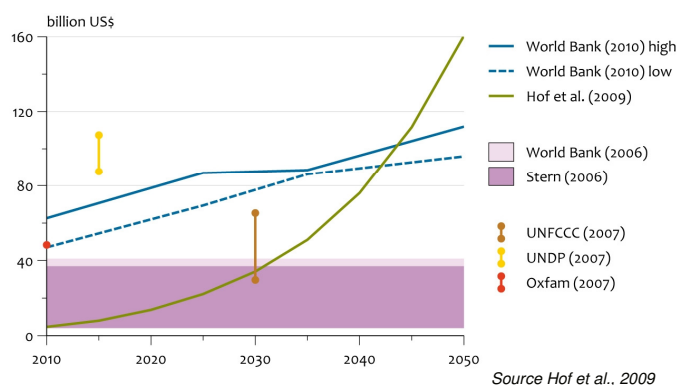
Introduction



- The opportunity for preventing *any* warming has now passed; respond by
 - Minimizing further warming (mitigate)
 - Finding ways to adapt to the impacts warming will bring
- Adaptation cuts across a myriad of sectors, thereby complicating attempts to assess the costs of global adaptation to climate change

Adaptation costs in developing countries

Adaptation costs in developing countries



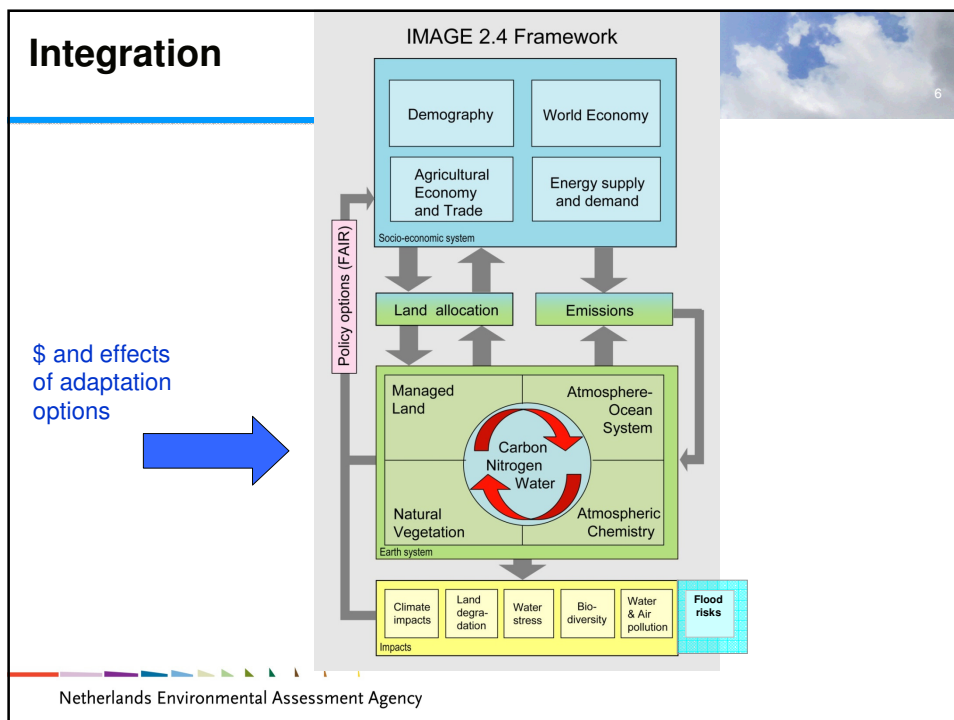
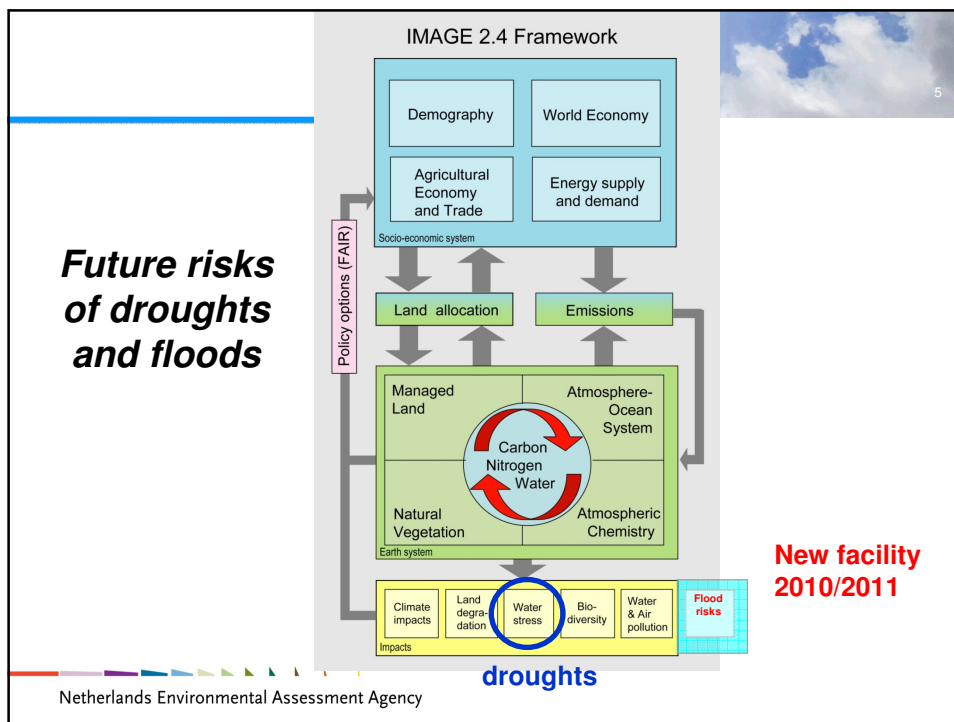
All top-down estimates

Netherlands Environmental Assessment Agency

Research Objective

To provide building blocks of knowledge on cost efficiency of adaptation options in developing countries and requirements for effective adaptation strategies within the context of sustainable development.

Netherlands Environmental Assessment Agency



Scope of research on adaptation

7

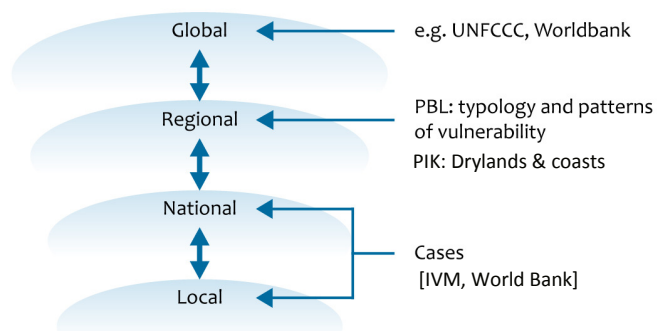
- Focus: developing countries
- Droughts / drylands
 - Floods
 - *Inland*
 - *coastal*
 - Salinisation of deltas
- Typology
 - Drylands
 - Riversystems
 - Coastal zones



Netherlands Environmental Assessment Agency

Bridging scales

Challenge: bridging scales

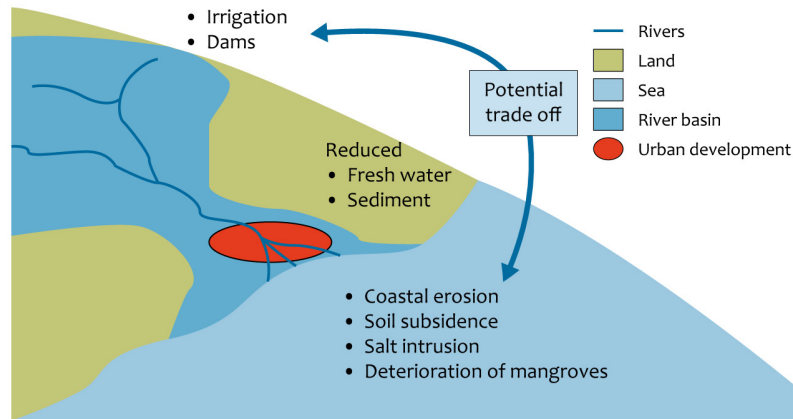


Netherlands Environmental Assessment Agency

Interactions trade-offs within river basins

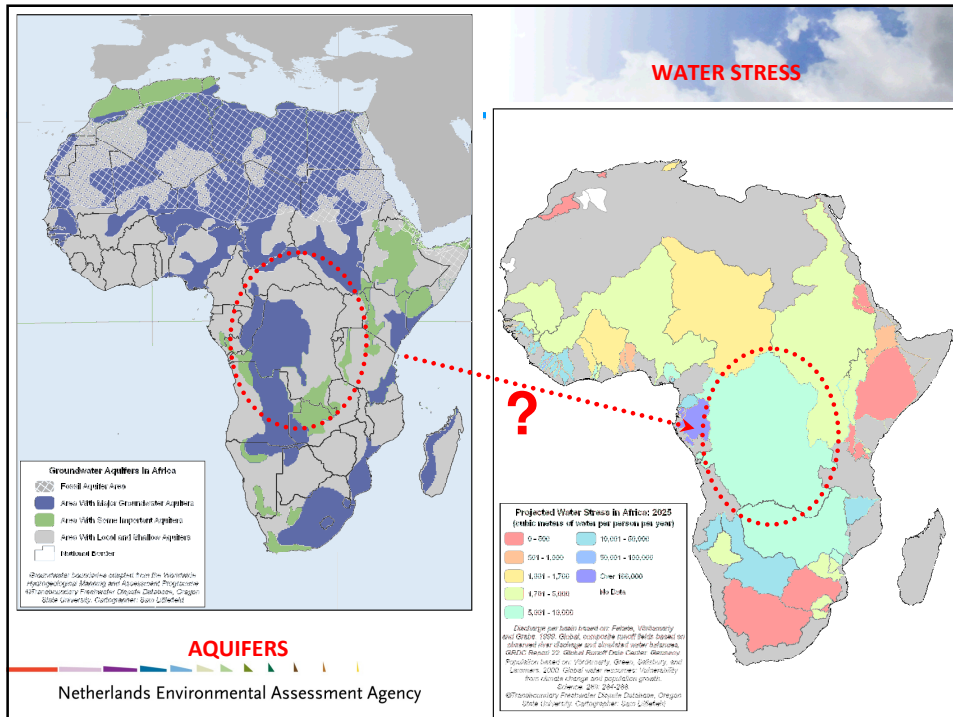
9

Interactions within river basins



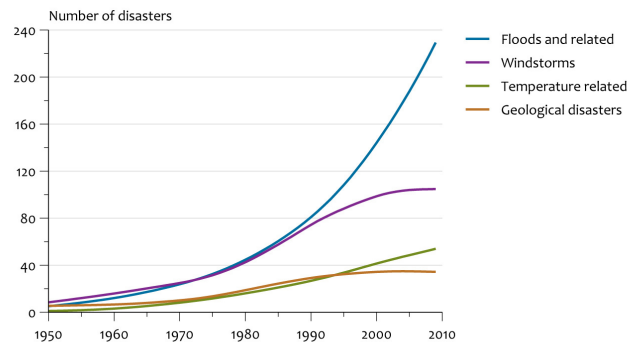
Netherlands Environmental Assessment Agency

Willem Ligtoet, Marloes Bakker



Vulnerability to floods

Trends in mayor types of natural disasters: 1950 – 2009 [as reported by CRED]



Netherlands Environmental Assessment Agency

In sum

12

- Risks of drought ⇔ potential use of deep aquifers
- Risks of floods
- Risk of salinisation of deltas
- Future developments
 - * *climate change*
 - * *population growth*
 - * *land use changes*
 - *
- Types of measures
 - * *Adjustment of behaviour/management*
 - * *Technical measures*
 - * *Land use development*
 - * *Migration (tipping points?)*



Changes in
vulnerability
patterns?

Netherlands Environmental Assessment Agency

Willem Ligtoet, Marloes Bakker

Methodology (*work in progress*)

	Reduces # casualties	Reduces \$ damage	Indication of costs	Indication of effect
Soft measures				
Technical measures				
Land use measures				
Adaptive capacity measures				

Overall goal

Addressing:

- Drought
- Floods
- Salinisation in deltas

Types

- Adjustment of behaviour/management
- Technical measures
- Land use development
- Migration (tipping points?)

Adaptive capacity

- Institutional
- Education
- Finances

Analysis of main actors

Building blocks for effective adaptation strategies

The road ahead

- Groundwater report: ready by mid 2011
- Trends in disasters report: ready by mid 2011
- Typologies report: ready by mid 2011
- Final report: ready by end 2012
- Continued cooperation with IGRAC/Deltares, Institute for Environmental Studies
- Future cooperation OECD and WWDR
 - *Water chapters in OECD Environmental Outlook*
 - *Costs and Effects in WWDR 4*

Netherlands Environmental Assessment Agency

Thank you!



More information:
marloes.bakker@pbl.nl
willem.ligtvoet@pbl.nl

Netherlands Environmental Assessment Agency