

Joint UNECE-UNCTAD Workshop:

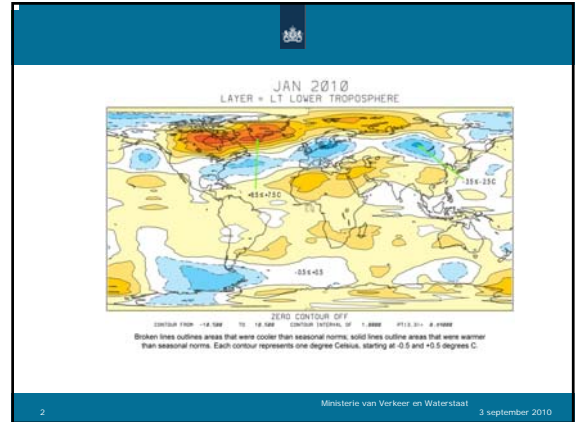
Climate Change Impacts on International Transport Networks

08 September 2010, Geneva

Climate Change and Inland Waterway Transport

Presentation by

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Ministerie van Verkeer en Waterstaat

Climate Change and Inland Waterway Transport

Bas Turpijn
Rijkswaterstaat - Ministry of Transport, Public Works and Watermanagement

3 september 2010

Ministerie van Verkeer en Waterstaat

The Deltacommission

In 2008, the dutch cabinet took over the recommendations of the "Deltacommission".

Samen werken met water

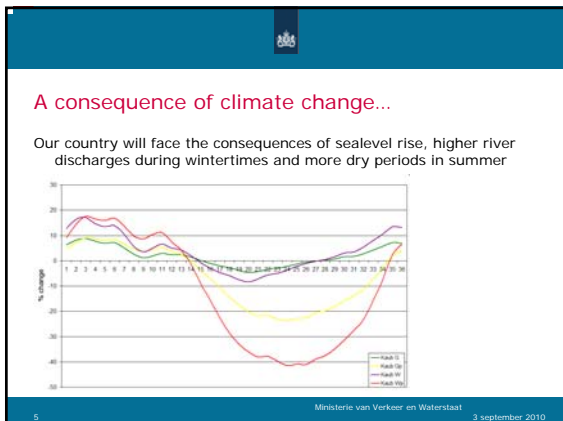
Van Streek tot land, samen aan eigen toekomst

Berichtingen van de Deltacommissie 2008

This commission concluded that *"the fresh watersupply" in the Netherlands is not climate proof on the long term*.

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The Deltaprogram

To anticipate to the consequences of climate change, the cabinet initiated the "Deltaprogram".

It contains several researchprograms to provide the dutch policymakers with the essential knowlegde to realize a new "National Waterplan".

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And what about inland navigation?

Inland navigation is one of the users of the "national fresh watersystem"

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And what about inland navigation?

Inland navigation (*binnenvaart*) is also an important mode in (inter)national freight transportation

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Knowledge on Climate

- >Climate change could be a threat for inland navigation
- >Knowledge on climate change is important to make proper policy and infrastructure planning
- >The Ministry for Transport, Public Works and Watermanagement decided to participate in the researchprogram "Knowledge for Climate" (KvK)

Kennis voor Klimaat Knowledge for Climate

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KvK Research project: Effects of climate change on inland navigation and competitiveness of the port of Rotterdam

TU Delft Framework, systemanalysis and -reliability

- VU Literature review & Interviews
- Deltares: Effects on riverdischarges and waterdepths, Effects on rivermorphology
- Rijkswaterstaat Impacts on inland navigation (costs)
- TNO Impacts on modal split & Dutch ports

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Effects on waterdepths

2004 2050 W+ scenario

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Effects on inland waterway transportcosts

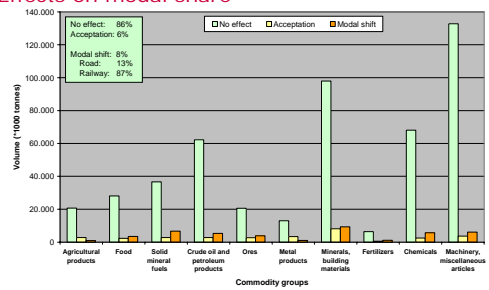
Study	Increase costs	Time horizon	Region	Low/High water
Millard, 2005	3% - 14%	2001-2030	Great lakes, USA/Canada	Low
Dem	6% - 22%	2001-2050	Great lakes, USA/Canada	Low
Bison, 2005	-44% - +35%	2002 - 2100	Middle Mississippi, USA	Low-High
Norden, van Duursen, 1999	10%	1990-2050	Rhine	Low-High
Jonckere e.a., 2007	15%	2004-2050	Rhine (Kaub)	Low
Rijkswaterstaat, 2005	54%	Gem (1901 - 2000) - 2050	Dutch waterways	Low
Rijkswaterstaat, 2009	4%	2004-2050	All freight transport from/to in NL	Low-High
Dem	10% - 12%	2004-2050	All freight transport from/to in NL	Low

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How will shippers react on higher costs....

- Modal shift from navigation to road and railtransport
- Invent new logistical chains
- Postponement of transportation
- Transportation with smaller (less deeper) ships
- Investments in storage capacity
- Increase navigation speed

Effects on modal share



Need for adaptation?

- Resumé
 - > more wet-periods during wintertimes and dry-periods in summer if climate change persists
 - > hinder for navigation because of higher and lower waterdepths in the rivers
 - > higher transportcosts and delay in arrival of goods
 - > modal shift from navigation to road- and railtransport
- What is the problem for the government?

Need for adaptation?

- Recall: navigation is not the only user of the fresh watersystem



agriculture ...

... and navigation

- Rijkswaterstaat (2005): damage (in €) to agriculture because of draught is 2x damage to navigation

Work in progress

- Who owns the problem?
Government, shippers, ports etc?
- Search for solutions.
Together with all stakeholders.
- Extend and share our knowledge.
Impacts of Climate Change on all freshwater users (agriculture, energy/industry, navigation, leisure) within the Deltaprogram and Knowledge on Climate
- Providing the proper information to the policymakers as input for our New National Waterplan to anticipate on climate change.