



Rijksinstituut voor Volksgezondheid  
en Milieu  
Ministerie van Volksgezondheid,  
Welzijn en Sport

## Climate change and human health

Update for the Dutch National  
Adaptation Strategy

Susanne Wuijts, Dineke  
Schram-Bijkerk, Cindy Vros,  
Ciska Schets, Marieta Braks



### About RIVM\*

- Promotes public health and consumer safety, and helps to protect the quality of the environment.
- Centre for knowledge and expertise
- For governmental authorities, professionals and citizens
- (international) collaboration
- Independent



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\*National Institute for Public Health and the Environment



## Background for this study

- Dutch National Adaptation Strategy (2016)
- Adds to Deltaprogramme for six sectors:
  - Transport
  - ICT
  - Energy
  - **Health**
  - Agriculture
  - Fishery

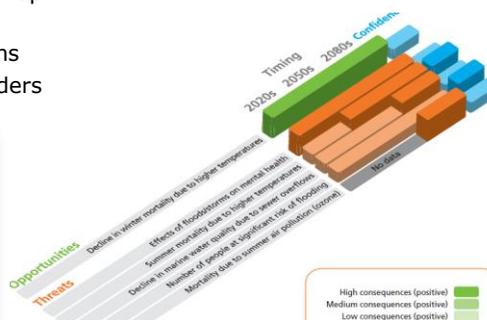
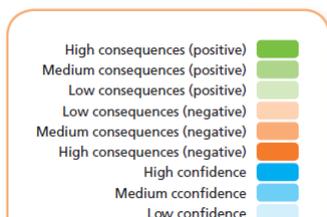


<http://english.deltacommissaris.nl/>  
<http://www.ruimtelijkeadaptatie.nl/en/nas2016>



## Risk assessments for each sector

- Review effect estimates from literature, e.g. CCRA UK 2012
  - Heat stress & air pollution, allergies, infectious diseases
- (Quantitative) estimates for effects in the Netherlands (using scenarios)
  - Expert judgement workshop
- Indicators and policy options
  - Workshop with stakeholders



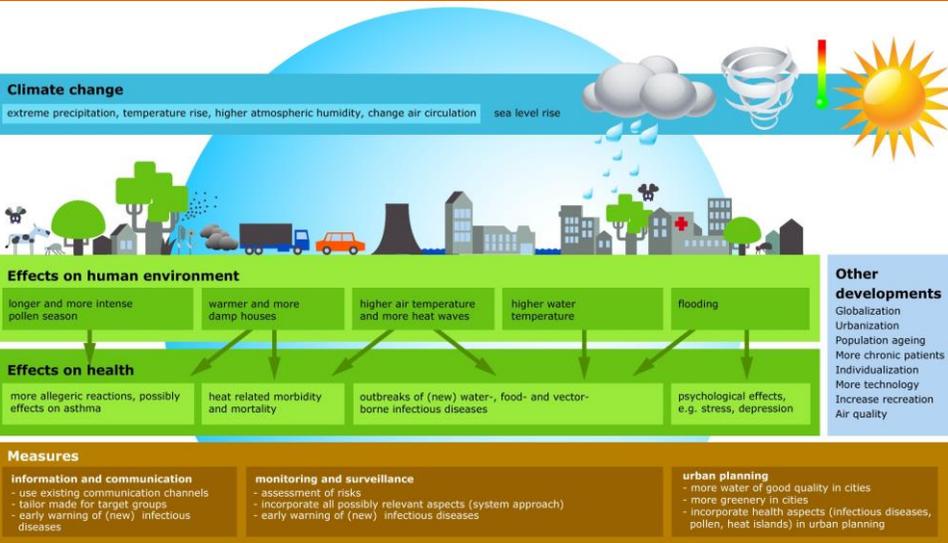
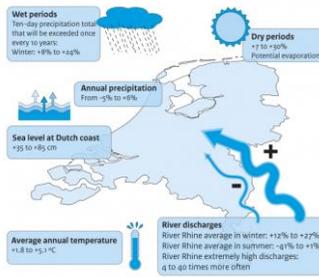


## Deltascenarios: future projections for climate change AND socio-economic developments

e.g.

- Temperature rise
- Heavy rains
- Sea level rise
- Urbanization
- Ageing population
- Globalization
- Decentralized governance
- More recreation

Possible climate changes for the 1990 – 2100 period, according to KNMI's scenarios





## Risk estimates

Risk	Effects climate & socio-economic changes		Evidence base	Policy options?
	Impact	Frequency		
<b>Direct effects</b>				
Heat-related	++	++	+ -	++
Cold-related	?	?	+ -	++
Mental diseases and drowning	++	+ -	+	++
<b>Aeroallergens</b>				
Hay fever and asthma	++	++	+ -	+
Indoor dampness & moulds	?	++	+ -	+
<b>Infectious diseases</b>				
Vectorborne	++	?	+ -	+
Water and foodborne	++	?	+ -	++



## Cross-over effects between sectors

- ICT & heat stress, air pollution: Apps, communication
- Nature & heat stress: natural capital (trees, parcs) for cooling
- Transport: spread of infectious diseases



## Conclusions

- Consistent with previous assessments in NL
- Impact potentially high
- Socio-economic changes might outweigh climate change effects (internationalization, urbanization, ageing population)
- Management of air pollution risks remains important
- Both positive and negative cross-over effects: opportunities for adaptation (BlueHealth project (Horizon2020))



## Recommendations

- Systems approach in risk assessments and policy making
- Gradually fill research gaps
- Identify win-win situations