



VU University Amsterdam



## Jakarta Climate Adaptation Tools

Project definition workshop – Jakarta, 18 Jan 2011

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IVM Institute for  
Environmental Studies

### Selamat datang!

- Partnership IVM-VU and UGM
- Flood risk management
- Flood risk: concepts
- Research questions
- Flood risk modelling
- Flood risk reduction: examples



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2

## Partnership IVM-VU and UGM

- CDC: network of delta cities active in the field of climate change adaptation
  - CDC movie and 2 books
- ITB-IVM Symposium Flood Risk in Jakarta (Nov 2008)
- Jakarta Climate Adaptation Tools –definition phase
  - Prototype flood damage for northern Jakarta
  - Presentations at international conferences (Rotterdam; Hong Kong)
  - Scientific papers in *Natural Hazards* and *Public Administration and Development*
  - Book chapter on flood risk in Jakarta



## Flood risk management

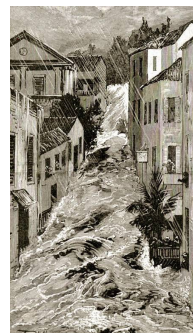


Netherlands, 1855



Jakarta 1652

- Major flooding is not new
- Neither is flood management...



Hong Kong: 1880s

## Flood risk management



Jakarta



Queensland, Australia, 2011

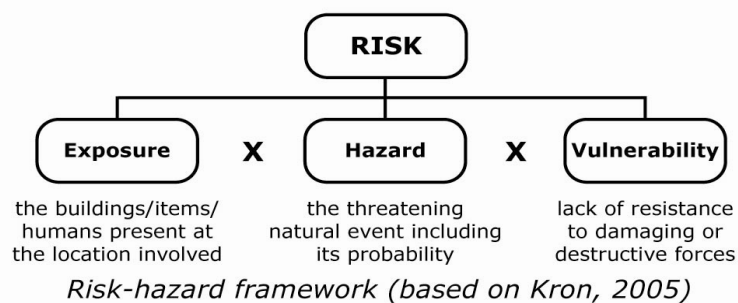


Pakistan, 2010

- But increasing recognition of need to address both causes AND consequences...

- → Flood risk management

## Flood risk: concepts

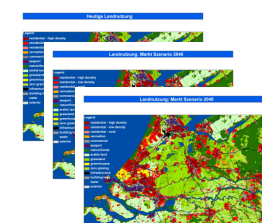


## Draft research questions

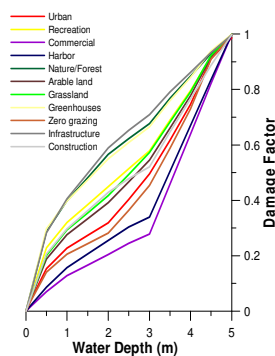
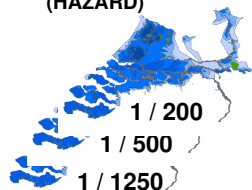
1. Physical and socioeconomic factors affecting flood risk in Jakarta?
2. Sensitivity of flood risk to those factors?
3. How to assess spatiotemporal changes in flood risk?
4. Future flood risk in Jakarta?
5. Most effective adaptation strategies for reducing flood risk in Jakarta?

## Flood risk modelling – Rhine example (1)

### Land-use projections (EXPOSURE)

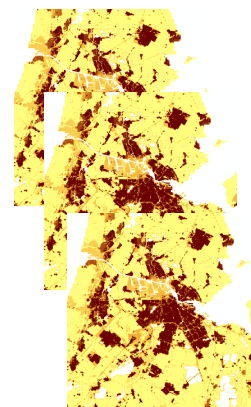


### Inundation Map (HAZARD)

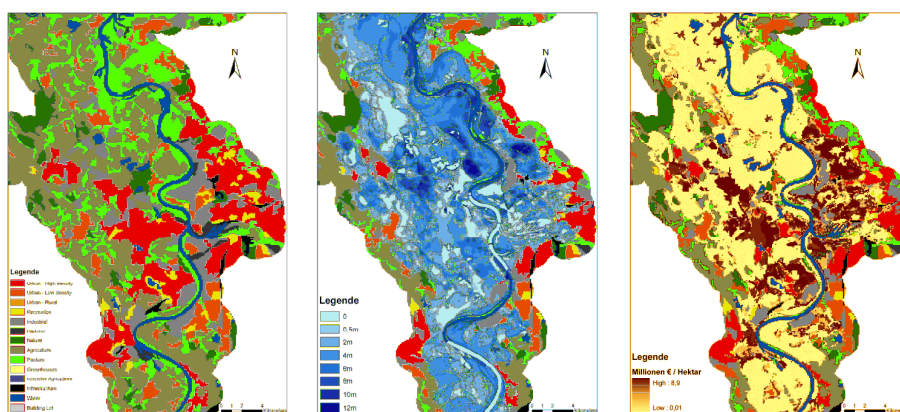


### Stage-damage functions (VULNERABILITY)

### Damage maps per scenario

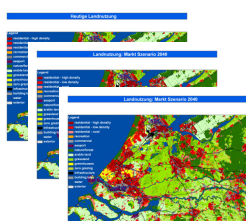


## Flood risk modelling – Rhine example (2)

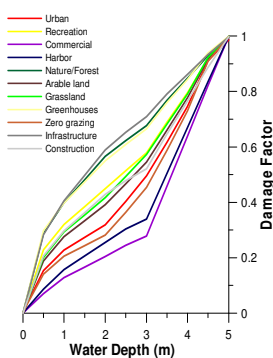
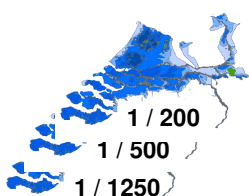


## Flood risk adaptation strategies

### EXPOSURE



### HAZARD



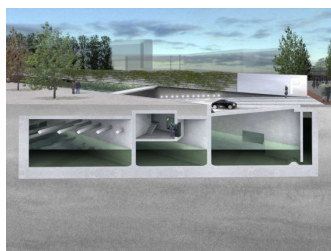
### VULNERABILITY

### Damage maps per scenario

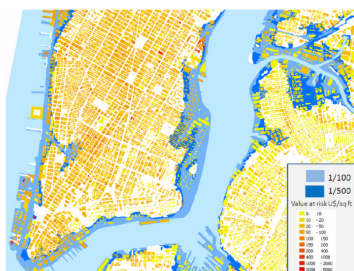




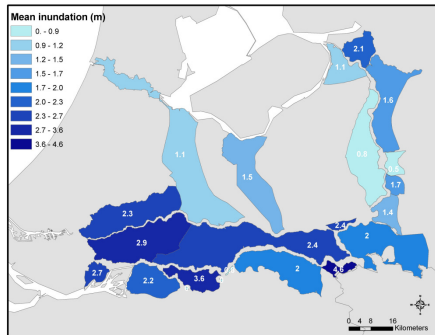
## Flood risk reduction: examples



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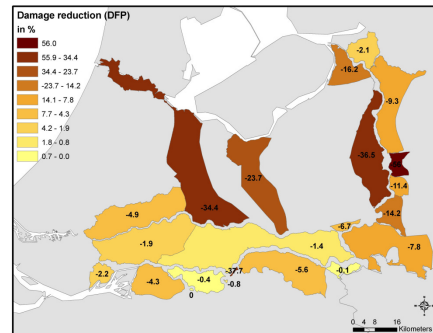


## Flood risk reduction: examples



*Mean inundation depth at residential locations*

*Damage reduction (%) due to dry flood proofing (DFP)*



**Terima kasih!**

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