

# Integrated watermanagement in Urban areas in Practice Oriented Education

School of Governance, Law  
and Urban Development  
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**SAXION**

# Saxion University of Applied Sciences

24.000 students and 2.000 staff members

11 Schools

51 Bachelor Programmes

12 Master Programmes



Apeldoorn



Deventer



Enschede



Hengelo





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# School of Governance Law and Urban Development



# Some themes within the new Urban Studies:

- *Climate resilient cities* >
  - **Accessibility**
  - **Health and safe cities**
  - **Transformation**
  - .....
- > *Integral watermanagement is and was a main issue*



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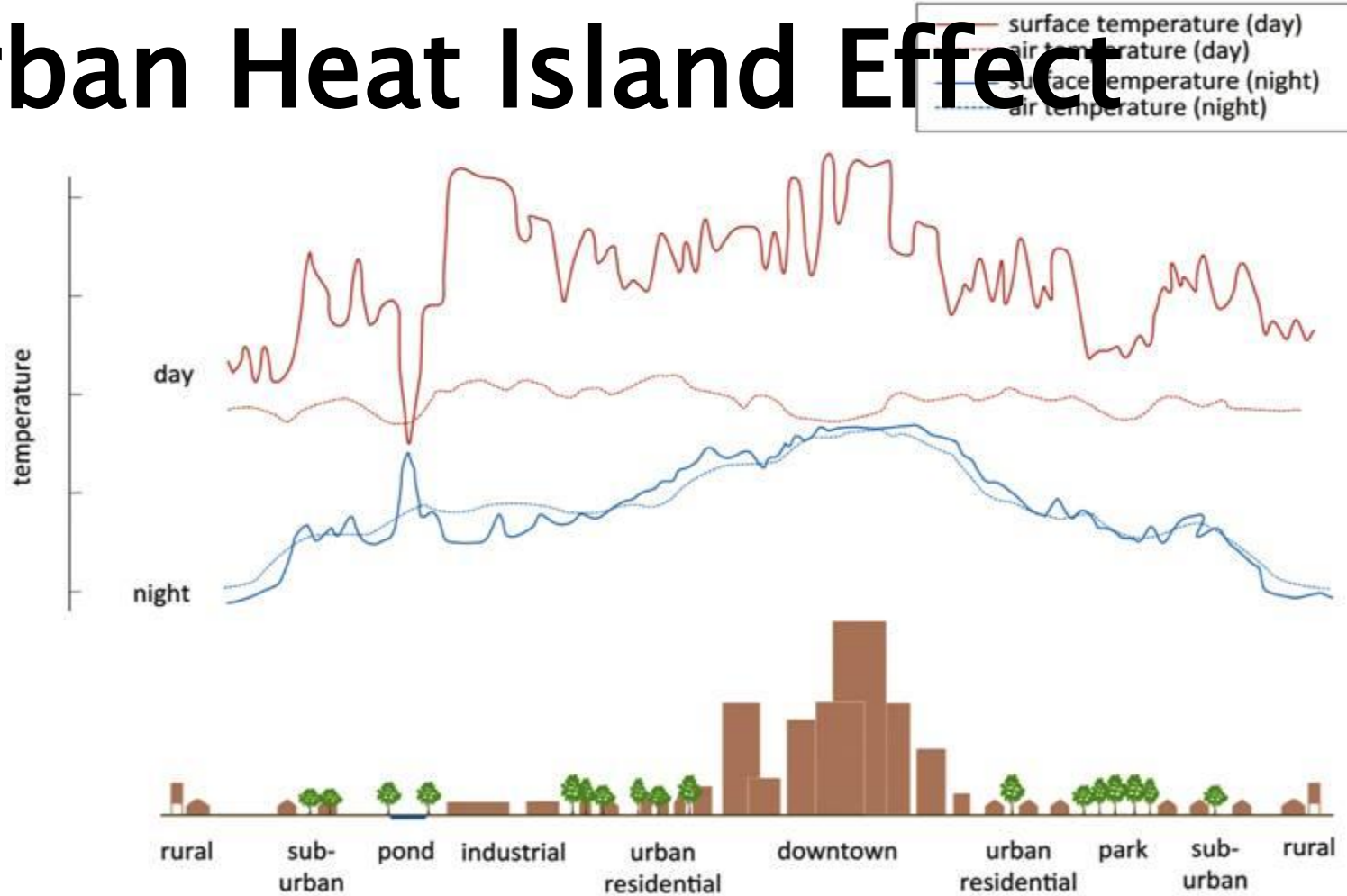
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# Urban Heat Island Effect



Air and surface temperature during the day and night [from: EPA, UHI Basics, 2008]

# Our Exchange programmes *for students from partner universities*

Spring semester:

- Urban Rural Fringes & Smart Cities (12–20 weeks)
- Risk & Emergency Management (12–20 weeks; starting 2015)

Autumn semester:

- Sustainable Area Development & Integral Water Management (12–20 weeks)
- International Law (12–20 weeks)





# Structure of int. academic year

<b>Induction (1 ECTS)</b>	<b>Capita Selecta Specialisations ES / CE / URP / UD (6 ECTS)</b>		<b>Bachelor Thesis Project (28 ECTS)</b>
	<b>Project Environmental Impact Assessment (8 ECTS) (* urban design has a different structure)</b>	<b>Project Integral Management (12 ECTS) Water</b>	
	<b>Professional Skills (5 ECTS)</b>		

# Netherlands Waterland

**26% of the Netherlands is situated below sea level.**

**If there were no dunes or dikes 66% of the Netherlands would be covered by water.**

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E25

Vught 3  
Eindhoven 30  
Maastricht 122  
A2

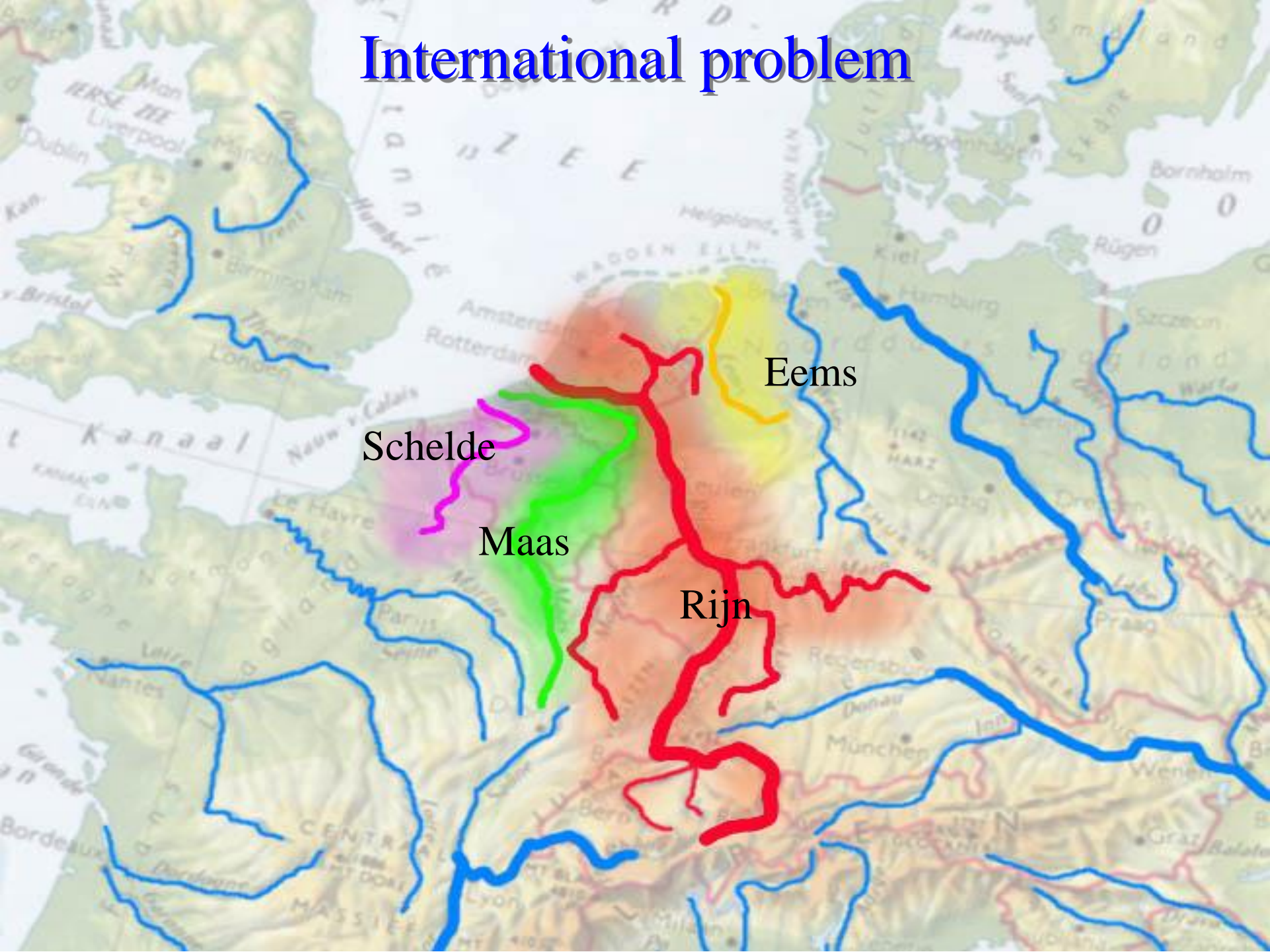
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Vught-Centrum  
Tilburg  
A65

E25  
Vught 3  
Eindhoven 30  
Maastricht 122  
A2

afrit 1  
Vught-Centrum  
Tilburg  
A65

# International problem



Eems

Schelde

Maas

Rijn



# Local effects



- **Education**
- **Research**
- **Professional field: consultancies, (other) companies, governmental institutions, ngo's.**

# Competences and beyond...

## Acting as a consultancy

- **Knowledge:** on the subject, technology, cause–effect relations... etc.
- **Skills:** practical skills; communication, GIS, methods of research, ...
- **Attitude**



# 3-1's

- Integral (*approach, multidisciplinary*)
- International (*perspective, comparative*)
- Intercultural (*groupwork*)



# Phases and products

## *Phases in real life project*

- Plan of Action
- Research/advice report
- Process report
- Presentation
- Oral Exam

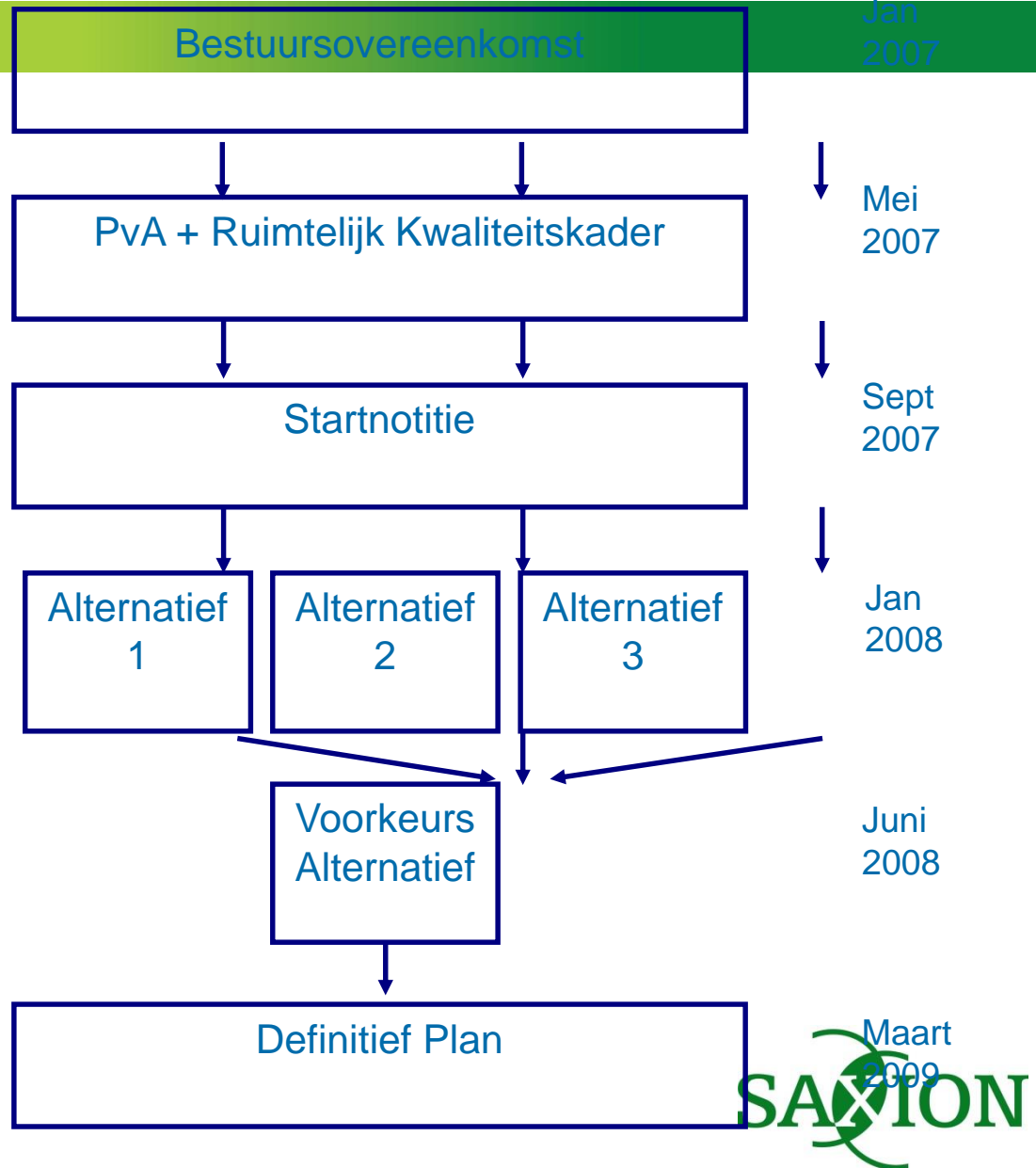


# Phases

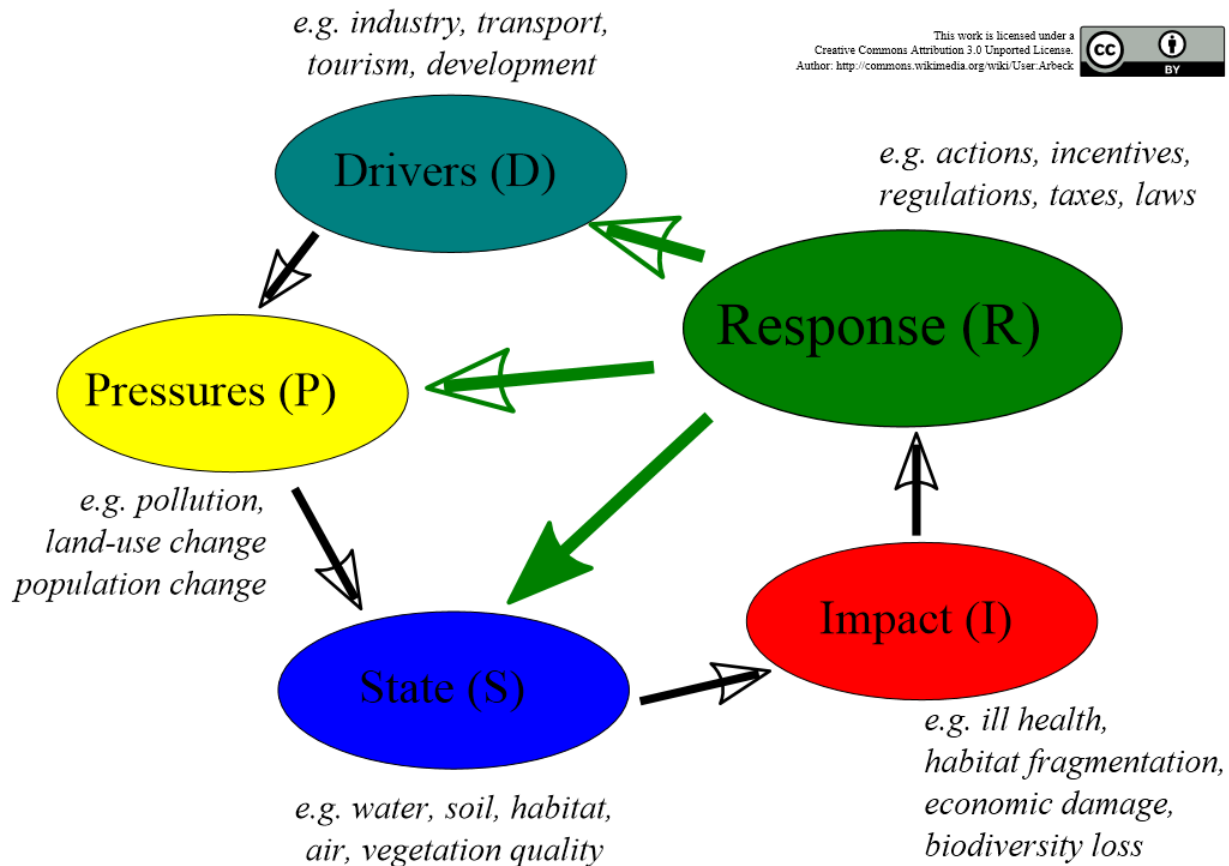
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## Plan study

- agreement between governmental organisations
  - plan of Action +
  - Initial report
  - Alternatives
  - Preferred alternative
  - Final plan
- 
- Planning delayed;
  - Execution started in 2013



# Content: e.g. policies NWP and EIA



- **Elaborate three scenarios**



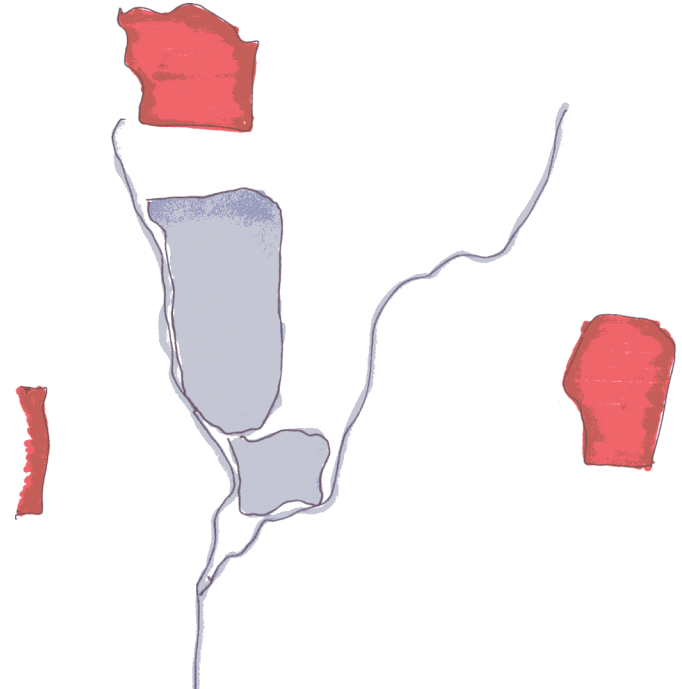
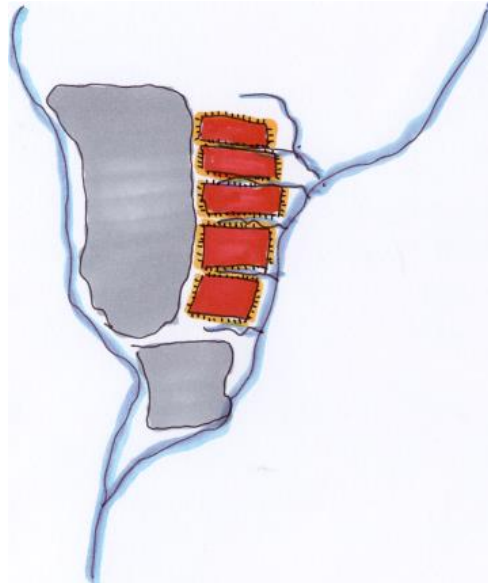
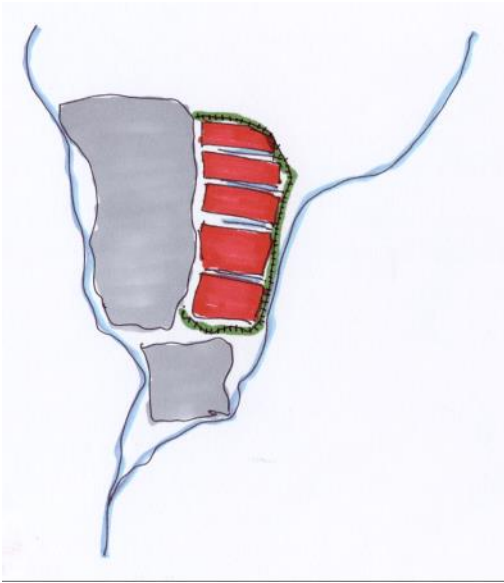
# Strategies

## 3 types of floodrisk strategies

- Flood risk = Flood frequency X Flood damage potential
- **hazard reduction**  
"keep the floods away from the people"
- **exposure reduction**  
"keep the people away from the floods"
- **vulnerability reduction: "accept flood and clean up afterwards"**

# Alternative strategies

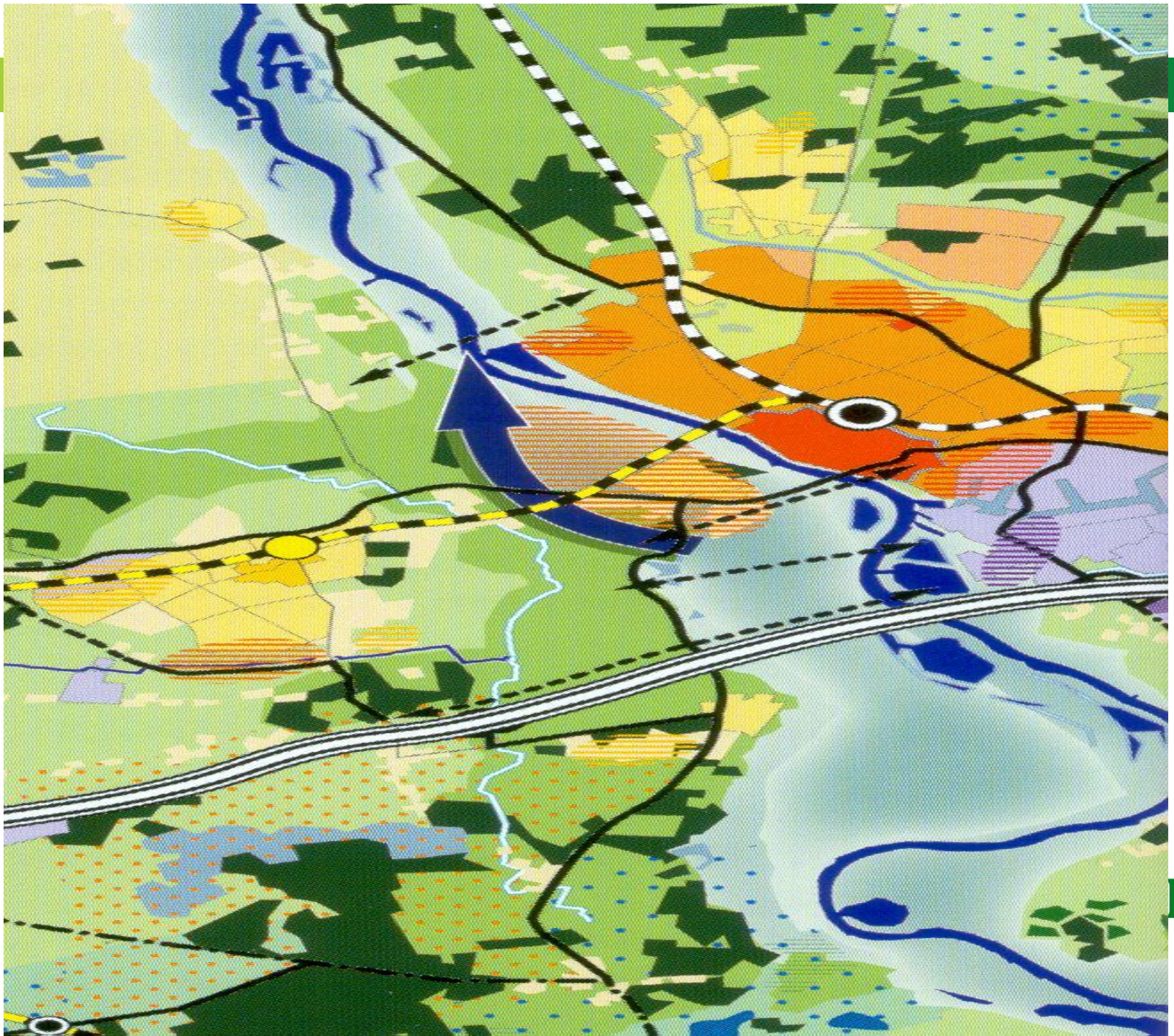
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# OR...

- **Bypass in the river bed**
- **Bypass around (part of) the city**
- **Retention area(s)**





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# Methods to elaborate, e.g.

- Environmental Impact assessment
- Multi Criteria Analysis: incl. decision making
- But as well: learning to reflect your work/group and other groups' work.

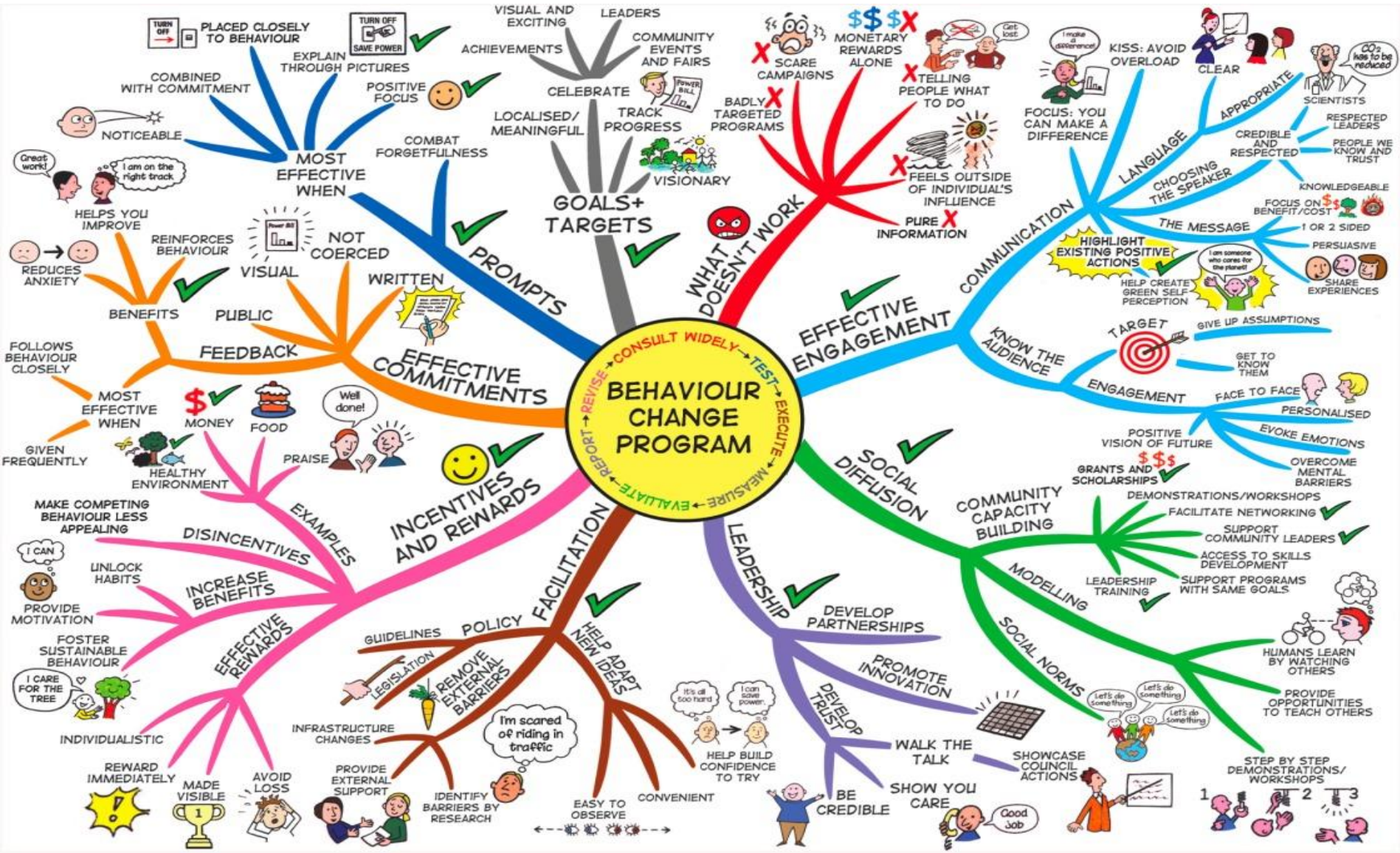
# Social issues

**E.g.**

- **interviews**
- **Stakeholder analysis**
- **How behaviour can be changed...**
  
- **As well essential for technical students**



# No one said it would be easy





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# Working towards solutions



# INSTRUMENTS

- Law based instruments
- Economical/financial
- Communicational
- Technological/Physical

## Other

- Research
- Organisational, ...
- So not only the design, and/or technology but influence behaviour with other means:
- *Elaborate for your subject...What can a municipality/region do?*
- *GIVE AN ADVICE....*

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# “Inclusive” Education like

- Lectures
- Workshops
- guestlectures
  
- Interviews
- Tutorship
- intervision
- Organisation and planning

- **LEARNING BY DOING**



- **Applied research**
- **Relevant for society**
- **If possible: In cooperation with companies, NGO's and governments**

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# City Lab & Saxion Center of Urban & Environmental Development



# Go for the challenge

- Creativity
- Evidence based

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