The City and Water, Wroclaw

Institutions for Water Management
A Review

Prof. Guy Alaerts

September 2018

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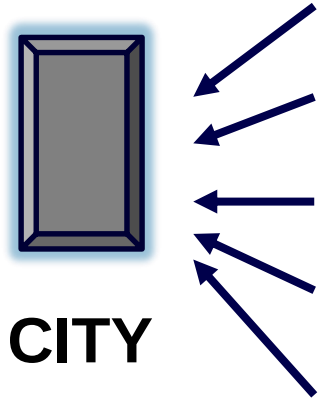
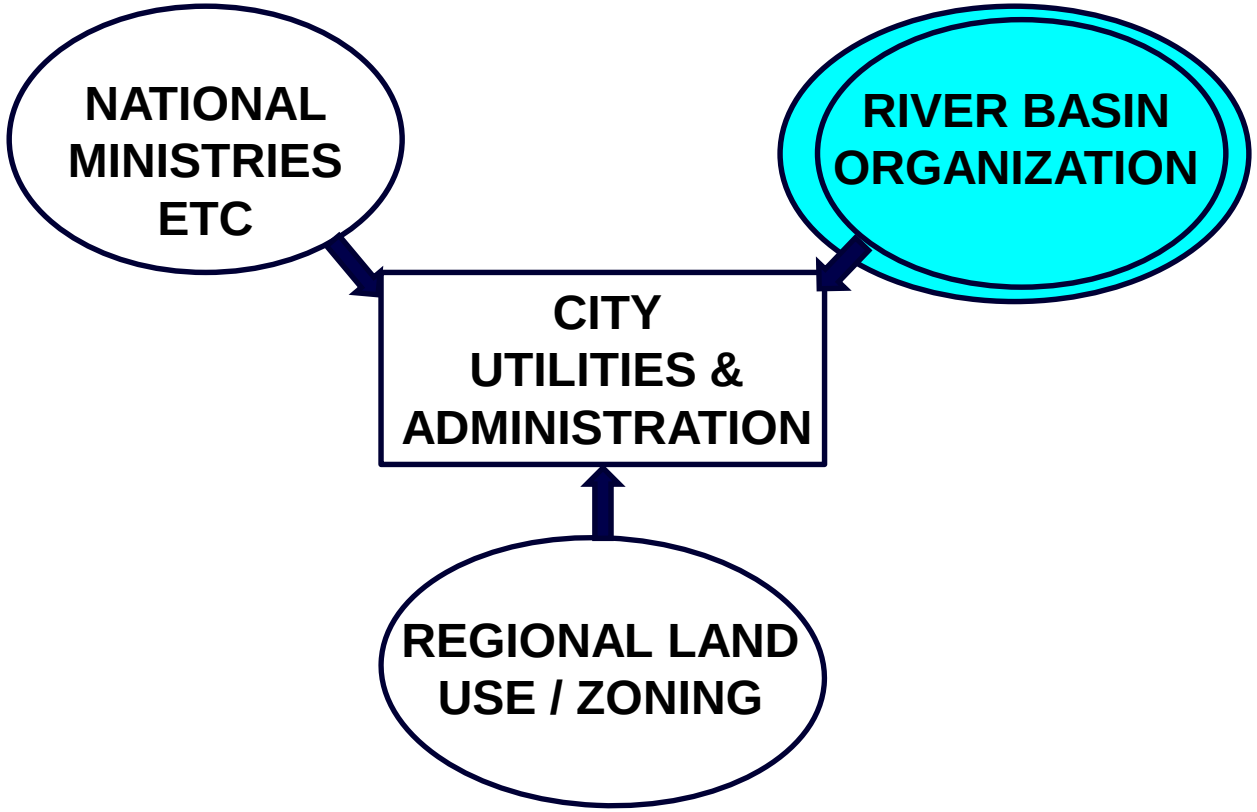
Water-related pressures on the city



- Drinking water supply
- Water pollution in and near city
- Floods: pluvial, fluvial, marine
- Groundwater: damage to basements and foundations, settling of buildings
- Amenity value (tourism)

Thus, the city impacts upon, and is impacted itself, by its surroundings

Water management and cities – Institutions with impact



Water and river management

Water and rivers best managed

- **By hydrographic unit (basin)**
- **At ‘lowest’ administrative level**
- **Integrating different uses, guided by ‘water value’**
- **Based on cost recovery principle (= budget discipline)**
- **As top-down (administrative) and bottom-up (participatory) process**
- **But … no blueprint for ‘model organization’**

UN Conference on Water (Mar del Plata 1977), International Conference on Water and the Environment (Dublin 1992), World Bank Water Strategy (1992), ADB Water Strategy (1995), Global Water Partnership (1999), Water Framework Directive (EU 2000), High Level Panel on Water (New York 2018)

River Basin Organizations (RBOs) types -- International

Executive organization	Hybrid Organization	Decision-support platform
Tennessee Valley Authority	International Rhine Commission	Mekong River Commission
Water Boards (Neth.)	Murray-Darling Basin Commission	Danube ICPDR
Office du Niger	Agences de l'eau	Sava ISRBC
Organisation pour … Fleuve Sénégal		
Large budget	**Small budget**	**Only Secretariat**
Large staff	**Small staff**	**Very small staff**
Construction	**Management**	**Dialogue, research**
Own most assets	**Own some assets**	**Own hydrol assets**

River basin management organizations -- Europe

Executive & autonomous	Hybrid Organization	Government Administration Unit
22 Water Boards* (NL) 3 Confederaciones Hidrograficas (E)	6 Agences de l'eau**(F) 11 Basin Mgmt Admin in Romanian Waters 6 Confederaciones Hidrograficas (E) 2 Basin Depts in Croatian Waters	D: Water Dept (per State) UK: Basin Units in Environment Agency (7), Wales Water Resources (4), Scottish Envir Prot Agency (2)
Collect fee **Large staff**	**Collect fee** **Small-large staff**	**Collect fee** **Small staff**

* Covers all WWT (50% of budget) ** Is financing facility (80% to WWT)

River basin management organizations – Europe: Observations

- **Tasks**
  - **Typically includes water quality mgmt., flood mgmt., drought mgmt. (NL, F: also heavy on WWT)**
  - **Typically excludes navigation (affects flood mgmt.), hydropower, irrigation development**
    - (Navigation: NL: Rijkswaterstaat; F: Voies navigables de France)
- **Organization performance**
  - **'Architecture' of administration is case-specific but fundamental principles of good public administration are available**
  - **Lack of good metric for effectiveness, efficiency, sustainability**
  - **Is work in progress, needs critical review**

River basin management – Europe: Agency finance (M€ p.a.)

Country	Romania	France	Netherlands	Turkey
Water quality mgmt	Total: Minor (WWT = municipal)	Agences: 1,500 Total: 3,600	1,100	0 (WWT = municipal)
Flood mgmt., river training, reservoirs, etc.	600	Agences: 220 Total: 450	Boards: 1,500 Total: 2,450	1,500-2,000
Navigability	Minor	750	900	0
Agency income	Fees: 400-500 State: 100-200 EC: 50	Fees (on water supply bill)	Fees	State
Included	WRM, WW discharge regulation, flood mgmt	Cofinancing of WS, WWT, local flood mgmt. and river works	WRM, all WWT, flood mgmt	WRM, reservoirs, irrigation, flood mgmt

River basin management – Need for Integrated Water Management

- **Many water uses, usually competitive**
- **Water bodies are inter-connected**
- **Smart investments can generate extra benefits thanks to synergy, economy of scale, complementarity, and lower transaction costs**

  Example: Dredging, river training and overflow areas for flood mgmt also benefit navigability, environment and drought mgmt

  Example: combining urban water supply and sewerage services in one utility (eg. WaterNet Amsterdam = water supply + WWT + waterways)

BUT – Too large 'holistic' organizations don't work well (too bureaucratic)

➔ Organizations must learn to work together

Case: Amsterdam water supply – source development and treatment

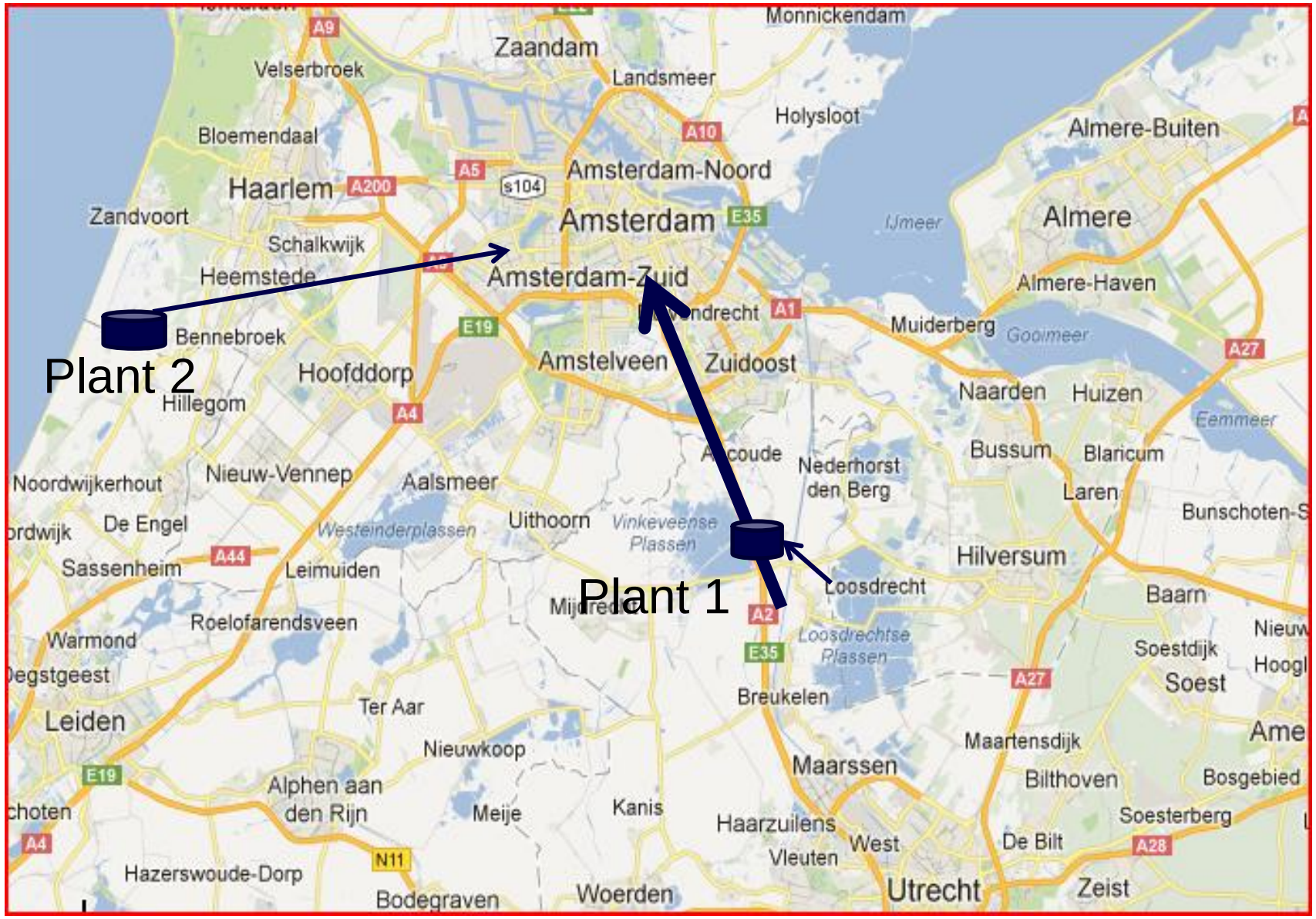
- **1990**: Amsterdam water supply needed major expansion

Two options:

1. Draw more water from existing intakes, invest in expanded flocculation + rapid filtration treatment,

2. Invest in acquisition of dunelands to enhance water source storage capacity and quality. No new expansion of treatment.

Integration: Amsterdam water supply source – in 1990



Integration: Amsterdam water supply source – in 1990

Old situation, inadequate to meet growing demand for more water, and water of higher quality:

A. Abstraction from Canal and from Loosdrecht Lake:

- Low quality
- Treated with reliable low-tech filtration technology (Plant 1)

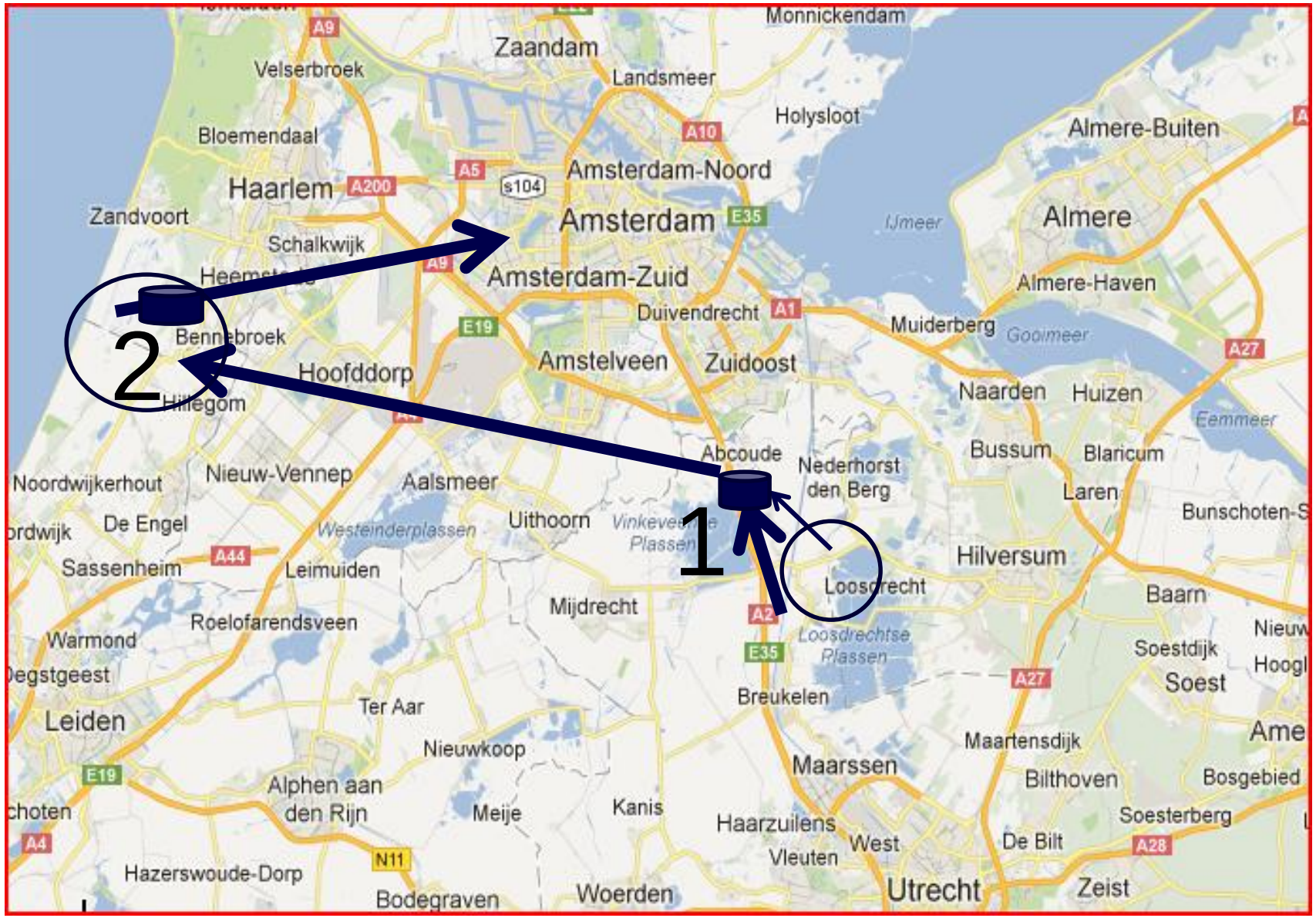
B. Abstraction from dune area (rain collection):

- High quality because natural filtration plus post-polishing (Plant 2)
- But low amount

➔

- Option 1: Invest in high-tech treatment, expensive
- Option 2: Buy abstraction areas and control water source

Integration: Amsterdam water supply source – in 2000



Integration: Amsterdam water supply source – in 2000

- Buy and preserve large abstraction zones (circles)
  - Loosdrecht lake and Bethune Polder: Buy out farmers, build drains to exclude external polluted water, regulate land use
  - Dune area: Buy area, expand area for infiltration, ‘build with nature’

Benefits:

- Treatment systems simplified
- Dune infiltration = advanced treatment + storage
- Very robust, more capacity in very dry years ➔ higher resilience
- Creation of nature areas and tourism
- Water tariff went down!

Integration: Amsterdam water supply source – in 2000

Required institutional collaboration between:

Amsterdam Waterworks

Amsterdam City Administration

3 Water Boards

3 Provinces
10 Municipalities

NGOs and civic groups

Ministry of Transport and Water
Ministry of Environment and Spatial Planning

Nature and Forestry Dept., Ministry of Agriculture
Land zoning agencies

Conclusions

1. In a time of economic growth and climate change, water will become ever more valuable
2. Resilient cities depend on sustainable river and water management
3. River basin management is the key to effective, efficient and sustainable water management
4. Integration is key challenge
5. Urban water utilities too often neglect their role in water management
6. Organizational design matters ! Use guidelines of good governance, but no standard ‘model’ exists
7. Best water management institutions combine bottom-up and top-down processes

Dziękuję