Urban Water Management

Case Study I: Berlin

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Content

- Background: Water in Germany
- History of the Berlin water supply & sanitation (WSS) services
- State of the Art
- Economic aspects
- Impacts of the WFD
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- Main constraints

Background I - Water in Germany

- Competence distributed between federal level and States (*Länder*)
- Municipalities have the right to manage the provision of public WSS services
- 5.4 billion m^3 per year used by public water supply (3 % of available resources)
- Low per-capita consumption with resulting high costs linked to infrastructure maintenance
- Yearly per-capita costs for drinking water: 82 Euro

Background II - Waste Water in Germany

- 95% of the population connected to an urban waste water collection system (2001)
- Tertiary treatment applied to waste water of 88% of the population
- Waste water disposal dominated by public undertakings, private sector involved in sub-tasks
- Yearly per-capita costs for waste water: 124 Euro
- For both drinking water and wastewater collection, the principle of cost-recovery is applied, and prices have remained stable for the last 10 years

The Elbe River Basin (German Part)

Source: www.fgg-elbe.de

History of the Berlin WSS

- **Before 1920**: Old Berlin surrounded by eight cities and 80 municipalities
- **1920-1945**: Water provision ensured in Greater Berlin by two separate entities, public & private
- **1949-1990**: Separate water provision, sewerage system remained connected
- **1992**: Merging of west and east providers of water and sanitation services
- **1999**: Partial privatisation of *Berliner Wasserbetriebe*

State of the Art I - Sewage Collection

- Large proportion of the population connected to the sewerage system: 99% in the west, 95% in the east
- Six wastewater works, only one located within Berlin
- Treatment plants include 'tertiary treatment'
  → Compliance with Urban Wastewater Treat. Directive
- Two sewerage systems
  - Separate rain water collection and untreated rain water discharge (75% of the area)
  - Mixed system with rain water and sewer collection (mainly in the centre)
- Long-term plans for the renewal and restoration of the Berlin sewerage system

State of the Art II - Water Quality

- Large proportion of Heavily Modified Water Bodies and artificial water bodies
- 75% of surface water bodies (WB) will most probably not reach WFD objectives
- All groundwater bodies achieve quantity objectives but almost all at risk of not reaching good chemical status
- Main pressures
  - Wastewater, especially overflow of mixed systems
  - Untreated rain water drained on paved surfaces
  - Pollution from outside Berlin (sulphate from coal mining)
  - Landfills, sites storing construction debris

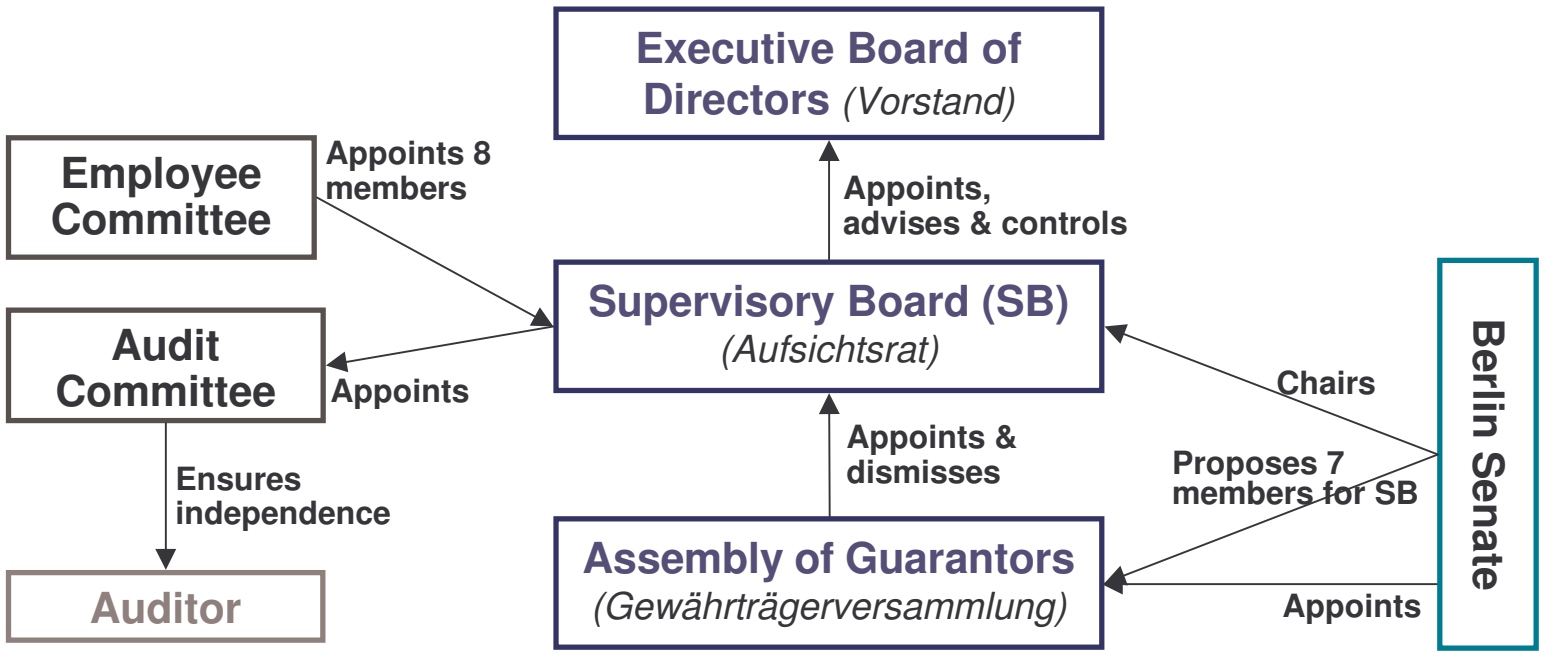
Economic Aspects I - Part Privatisation

1999: Part-Privatisation *Berliner Wasserbetriebe* (BWB)

- Public-private partnership between RWE, Vivendi (now Veolia), (and Allianz - until 2002)
- BWB: integrated in *Berlinwasser Holding plc*, legally keeping status of public-law company
- Original contract: guaranteed consortium minimum rates of return for 28 years, plus 2% profit margin on original investment capital
  → Judged unconstitutional (’99), law amended (’03)
- Non-public consortium agreement: aimed to ensure influence of *Land* Berlin; tariffs, employment, investments

Economic Aspects II - Management

Organisational Structure: *Berliner Wasserbetriebe*



Economic Aspects III - Charging System

- Charging system
  - No two-tired tariffication system: only variable charge
    - 80% fixed costs can only be covered through consumption-based charges
    - High water saving incentives for customers
    - Uncertainties for BWB as service provider
  - Connection fee, sewerage charge, rainwater charge (effluent charge)
- Strategies
  - Change in tariffication system: still rejected by Berlin Senate
  - Regional expansion of wastewater collection and treatment activities

Impacts of the WFD I

- **Institutional framework for WFD implementation**
  - Havel co-ordination area
  - River Basin Community Elbe (FGG-Elbe)
  - International Commission on the Protection of the Elbe River Basin (ICPE)
  - Close co-operation with *Land* Brandenburg
- **Achievement of "Good Status" by 2015 ?**
  - Not quantity, but quality problems
  - Berlin WFD characterisation report: 84% of surface water bodies artificial or heavily modified (Spree)
  - Biggest challenge: hydromorphology

Impacts of the WFD II

- **Economic challenges**
  - **Improved reporting on cost recovery**
  - **Accounting for subsidies**
  - **Apportionment of costs of measures yet unknown**
  - **WFD may speed up change of pricing system**

Further Needs

Further activities are required in the following areas:

- **Adjustments in rainwater management**
- **Improvements in hydromorphology**
- **Management of groundwater**
- **Reduction in sulphate loads**
- **Minimisation of nutrient pollution**
- **Adaptation of monitoring programme**
- **[…]**

Main Constraints

- **Institutional and political constraints**
  - Administrative vs. implementation scale
  - Nutrient reduction
- **Technical constraints, e.g.**
  - Hydromorphology
  - Sulphate load reduction
  - Modification of rainwater collection system
- **Economic constraints**
  - Budget insufficient for establishing ‘good status’ area-wide → Prioritisation needed (Criteria for priorisation? Affordability (Art. 4)?)

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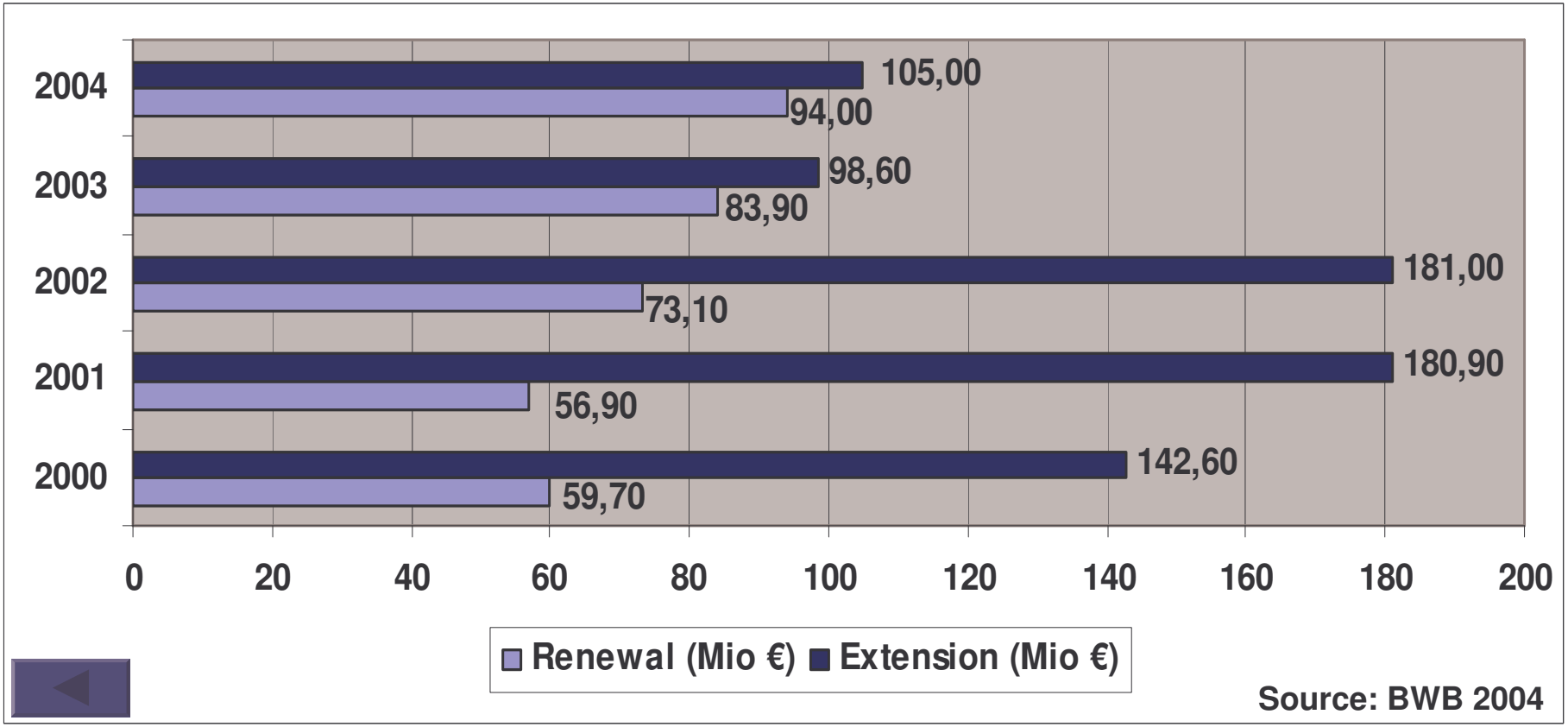
Economic Aspects – Annex I

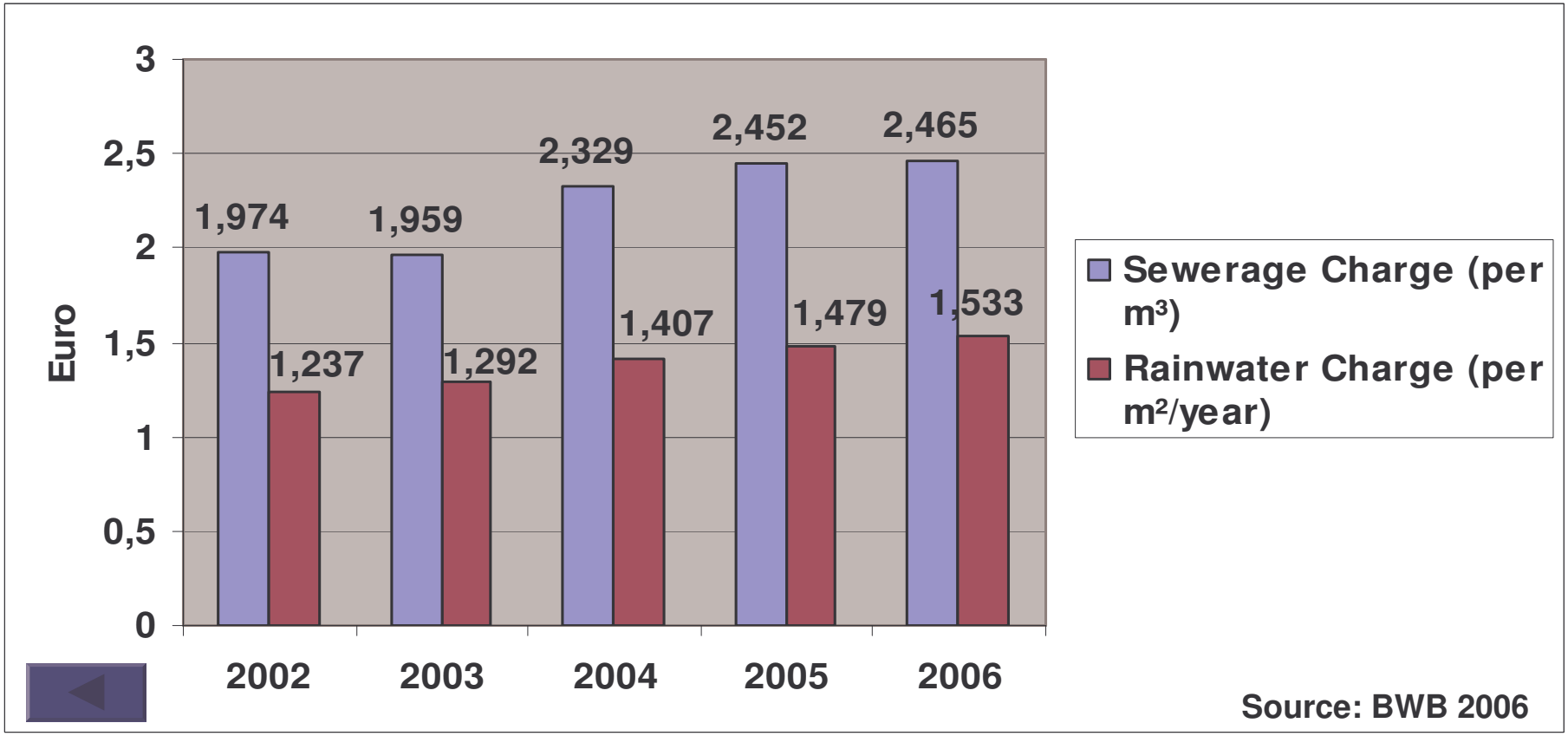
Investments in the sewerage sector: BWB 2000-2004



Source: BWB 2004

Economic Aspects – Annex II

Evolution of sewerage and rainwater charges in Berlin



Source: BWB 2006