

## **International comparison on drinking water supply**

**Investigations on water supply situation,  
management structures and water pricing**

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**Project work at  
Institute Water Management & Water Supply,  
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## Background

**Different political, economical, geographical and socio-cultural frame conditions require adjusted structures in water supply**

**Existing structures and systems does not always cope with the complex requirements to sustainable water supply**

**Facing the large reform demand in water management in many places it is helpful to take a look at different settings of frame conditions, supply enterprises and supply systems world wide**

**From positive and negative experiences alternatives for reform demanded water supply structures can be pointed out**

***Aim of this project work is***

***to investigate essential aspects of drinking water supply in international frame concerning basic characteristics, advantages and disadvantages as well as future developments***

# 1 Introduction

## 2 Supply situation and supply systems

### 2.1 Introduction

### 2.2 Demographic trends

### 2.3 Supply situation

(Basic supply with drinking water, water use, household water consumption)

### 2.4 Quality of supply

(Type and condition of supply systems, supply reliability, water quality)

### 2.5 Development goals for drinking water supply

## 3 Frame conditions for water management

### 3.1 Introduction

### 3.2 Institutional frame conditions

### 3.3 Legal frame conditions

### 3.4 Economical frame conditions

### 3.5 Political frame conditions

## 4 Water management structures

### 4.1 Introduction

### 4.2 Structures in countries

(Industrial, emerging and developing countries)

### 4.3 Public structures

(Public enterprises, advantages and disadvantages of public enterprises)

### 4.4 Private participation

(Models for private participation, advantages/disadvantages, multinational companies)

### 4.5 Structural developments

## 5 Water pricing

### 5.1 Introduction

### 5.2 Pricing

(Principles and factors of pricing, cost recovery, subsidy etc.)

### 5.3 Tariff structures

(Tariff structures, seasonal and geographical factors, water supply free of charge)

### 5.4 International price comparisons

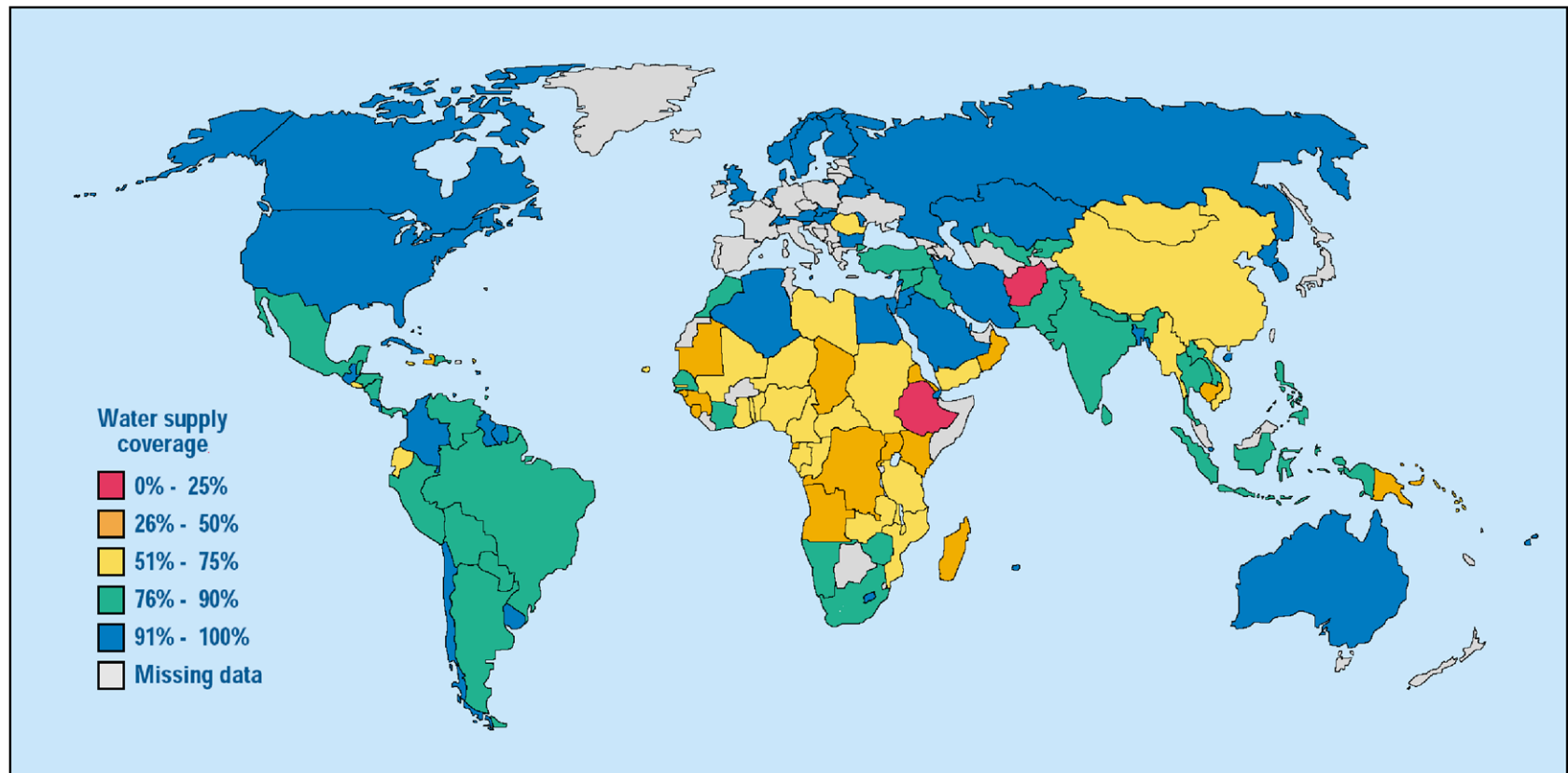
(Frame conditions for price comparisons, price comparisons by NUS, UBA and WHO)

### 5.5 Price trends

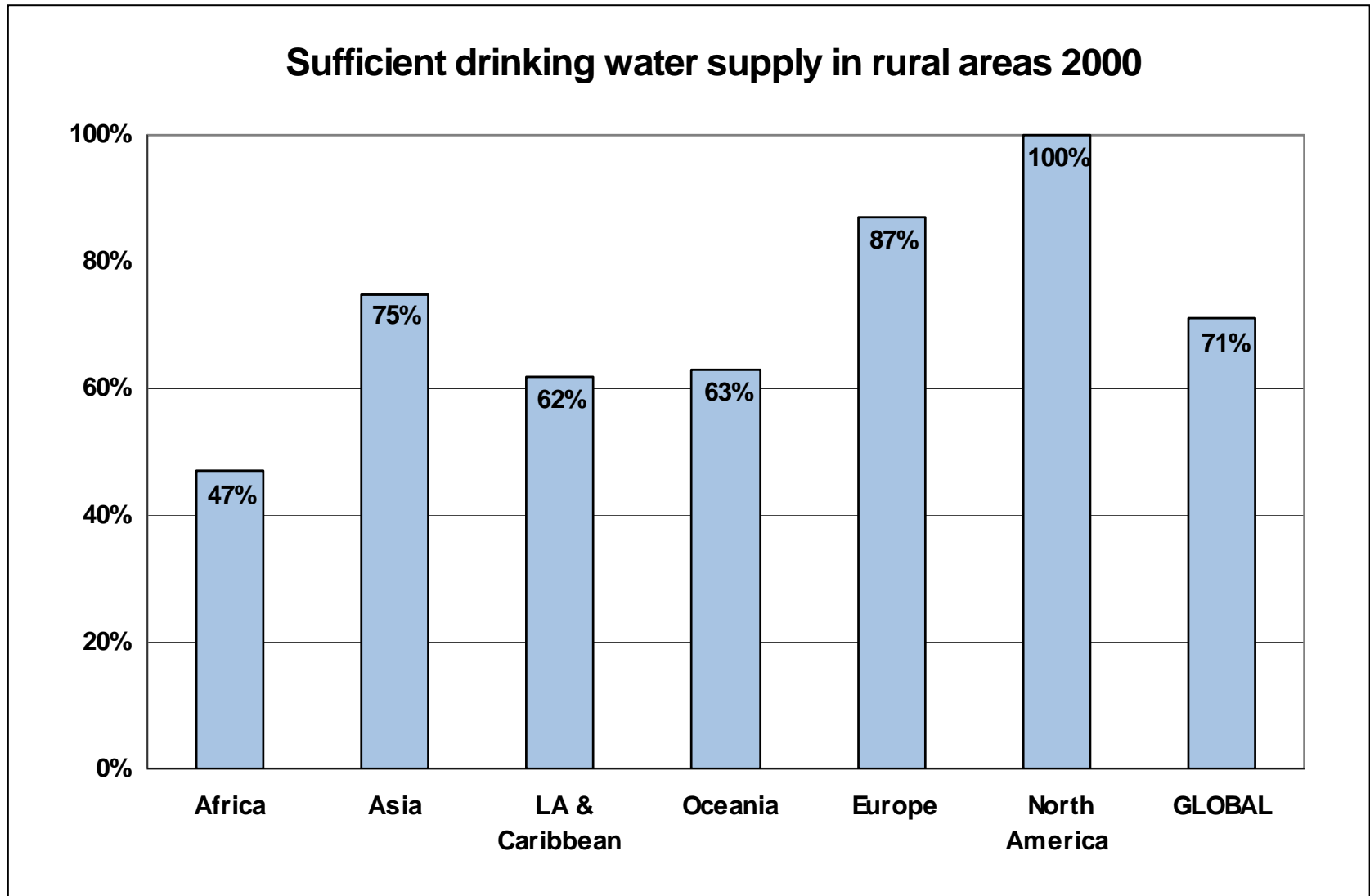
## 6 Summary

## Population without sufficient water supply

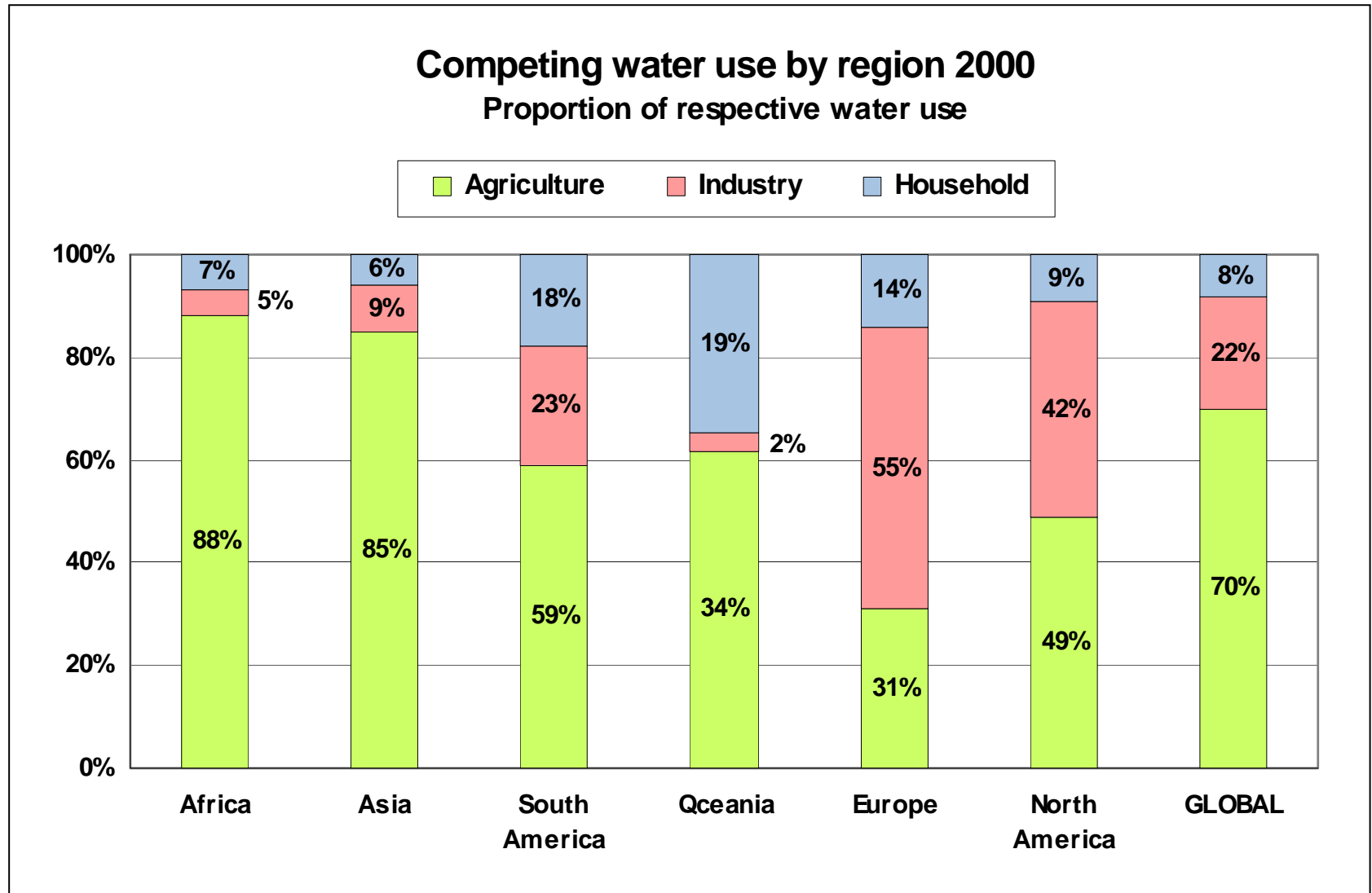
Ca. 1.099 billion people live without sufficient water supply (1/6 of worlds population),  
There from live 63% in Asia, 28 % in Africa, 7% in Latin America & the Caribbean, 2% in Europe



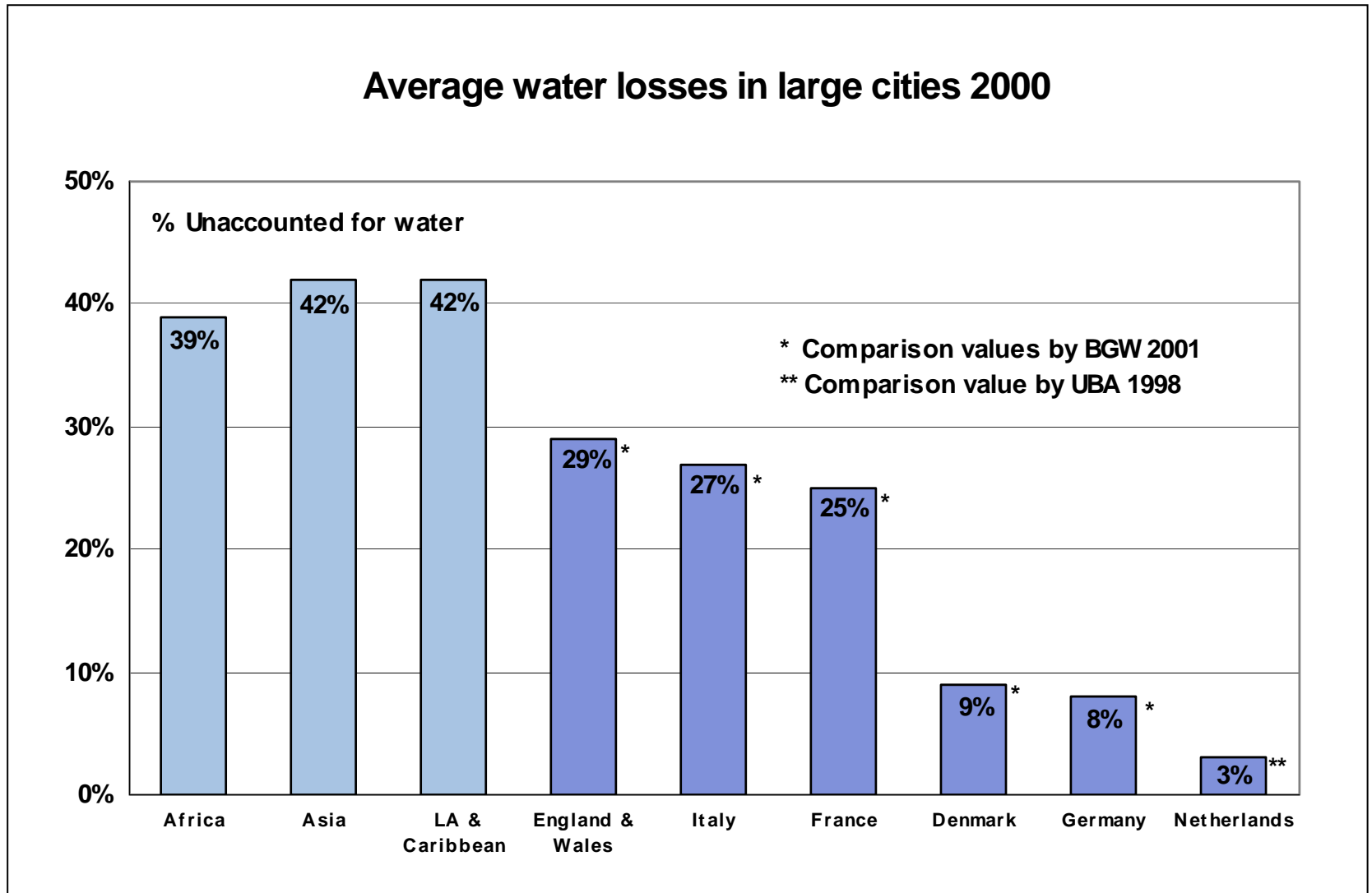
Source: Global Water Supply and Sanitation Assessment 2000 Report, WHO/Unicef 2000



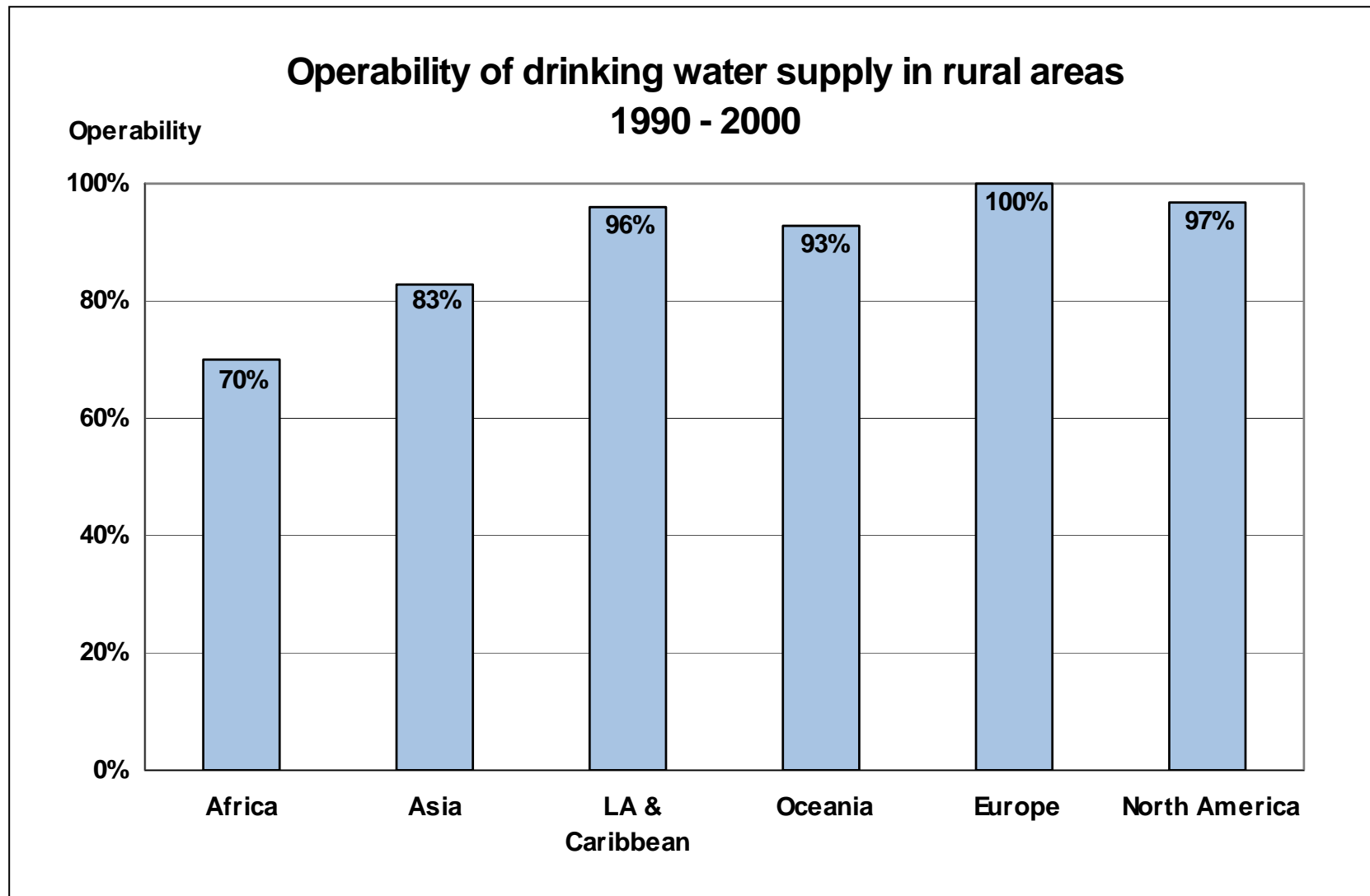
Source: Global Water Supply and Sanitation Assessment 2000 Report, WHO/Unicef 2000



Source: Global Water Supply and Sanitation Assessment 2000 Report, WHO/Unicef 2000



Source: Global Water Supply and Sanitation Assessment 2000 Report, WHO/Unicef 2000; BGW 2001; UBA 1998

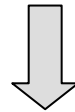


Source: Global Water Supply and Sanitation Assessment 2000 Report, WHO/Unicef 2000

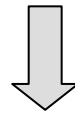
## **Insufficient current supply situation and additional future demand through population growth and industrialisation in emerging and developing countries**

International goal of halving the proportion of population without sufficient water supply by 2015

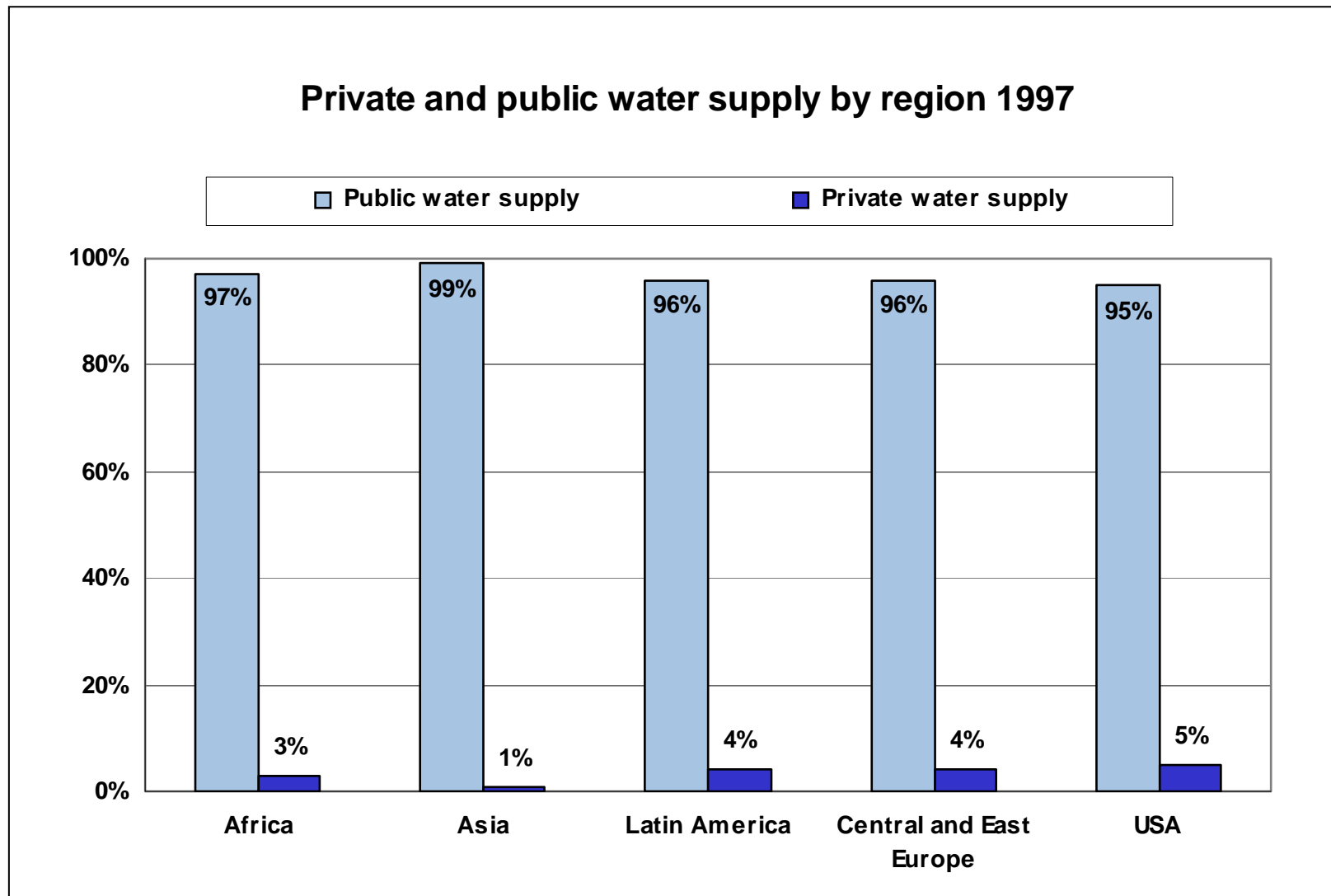
⇒ additional supply for 1.6 billion people = 292.000 people per day  
(at population growth of 20%)



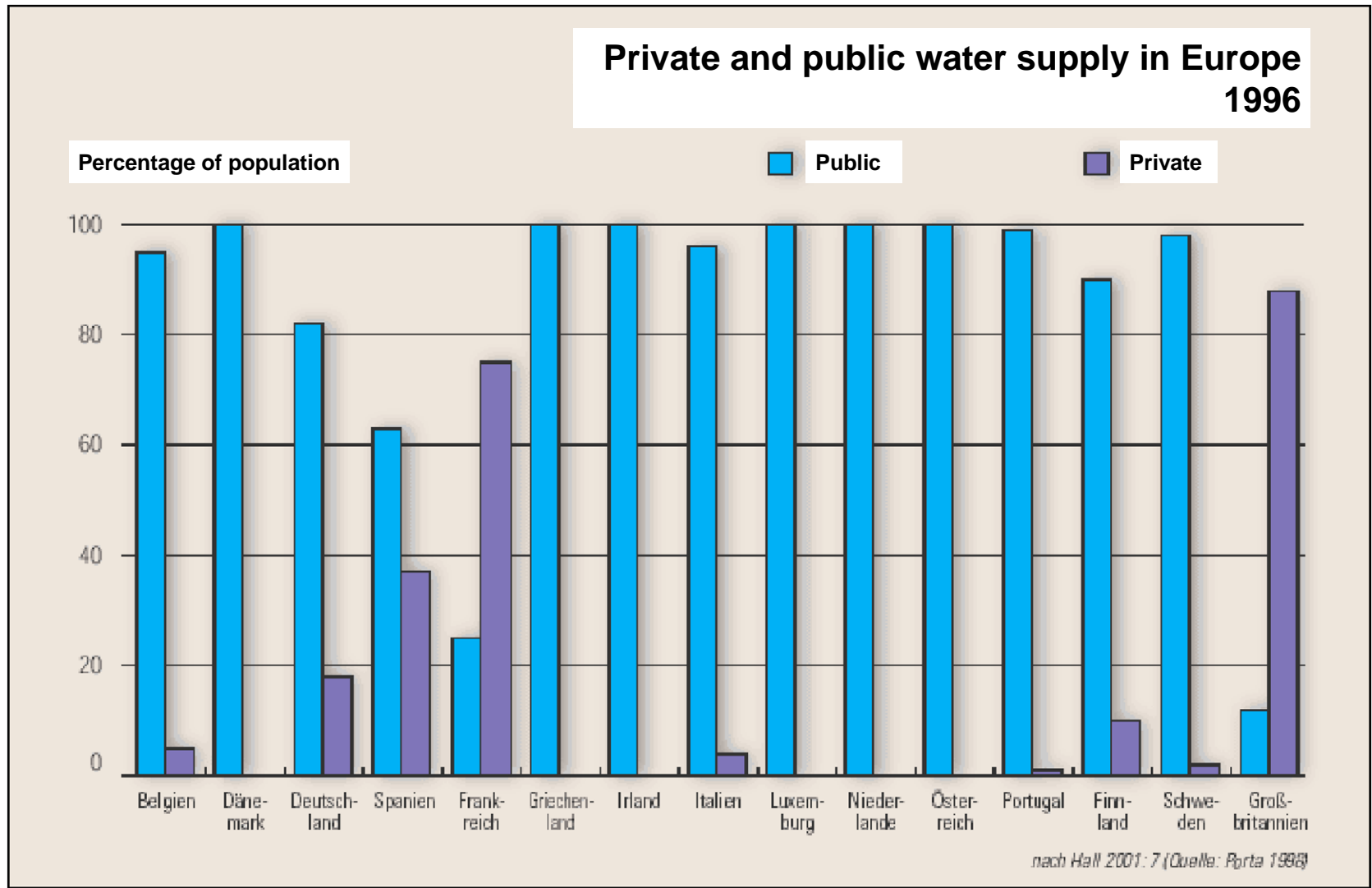
**High demand for investments in water sector at limited public budgets**

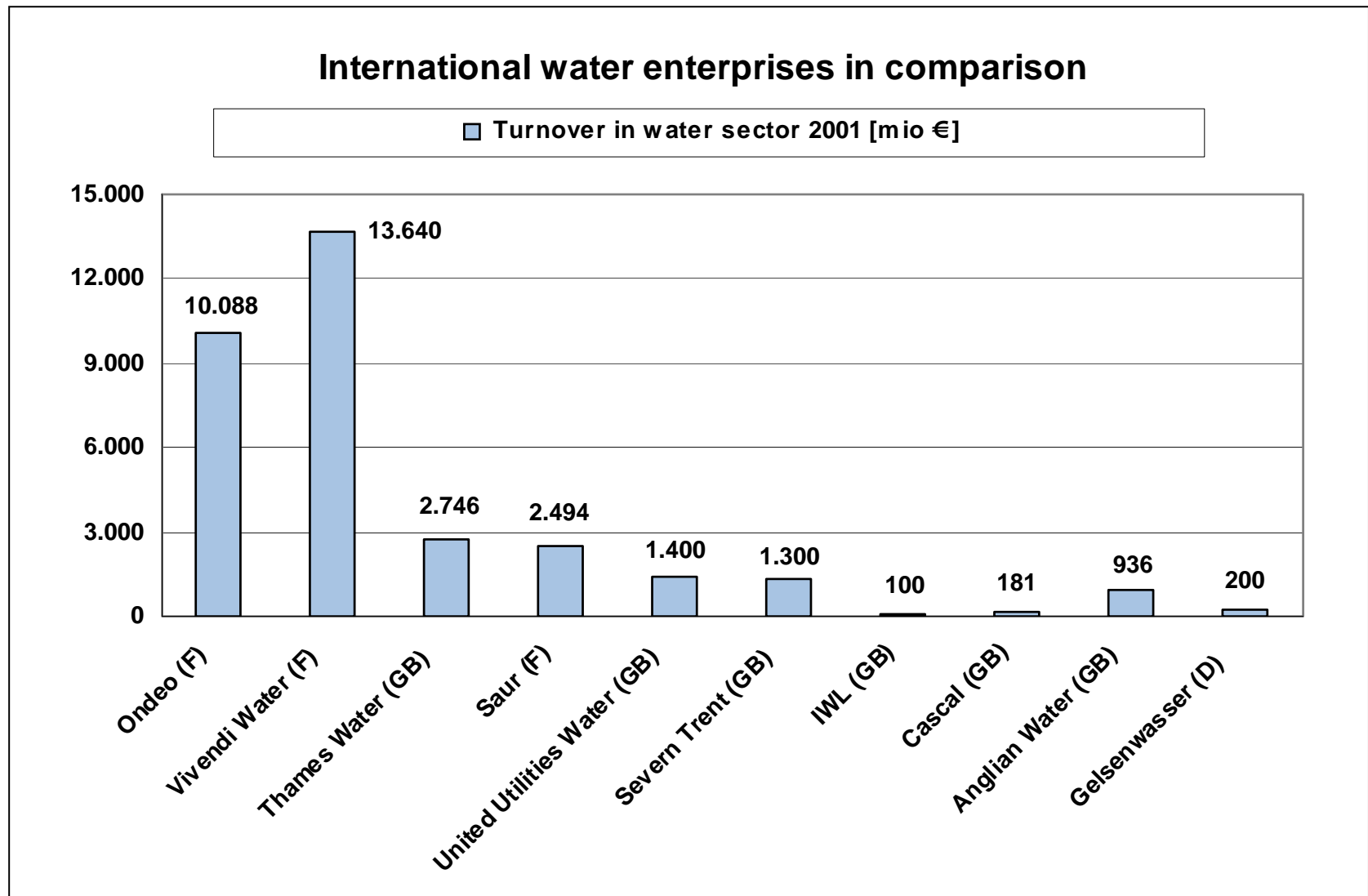


**Public or private water supply?**

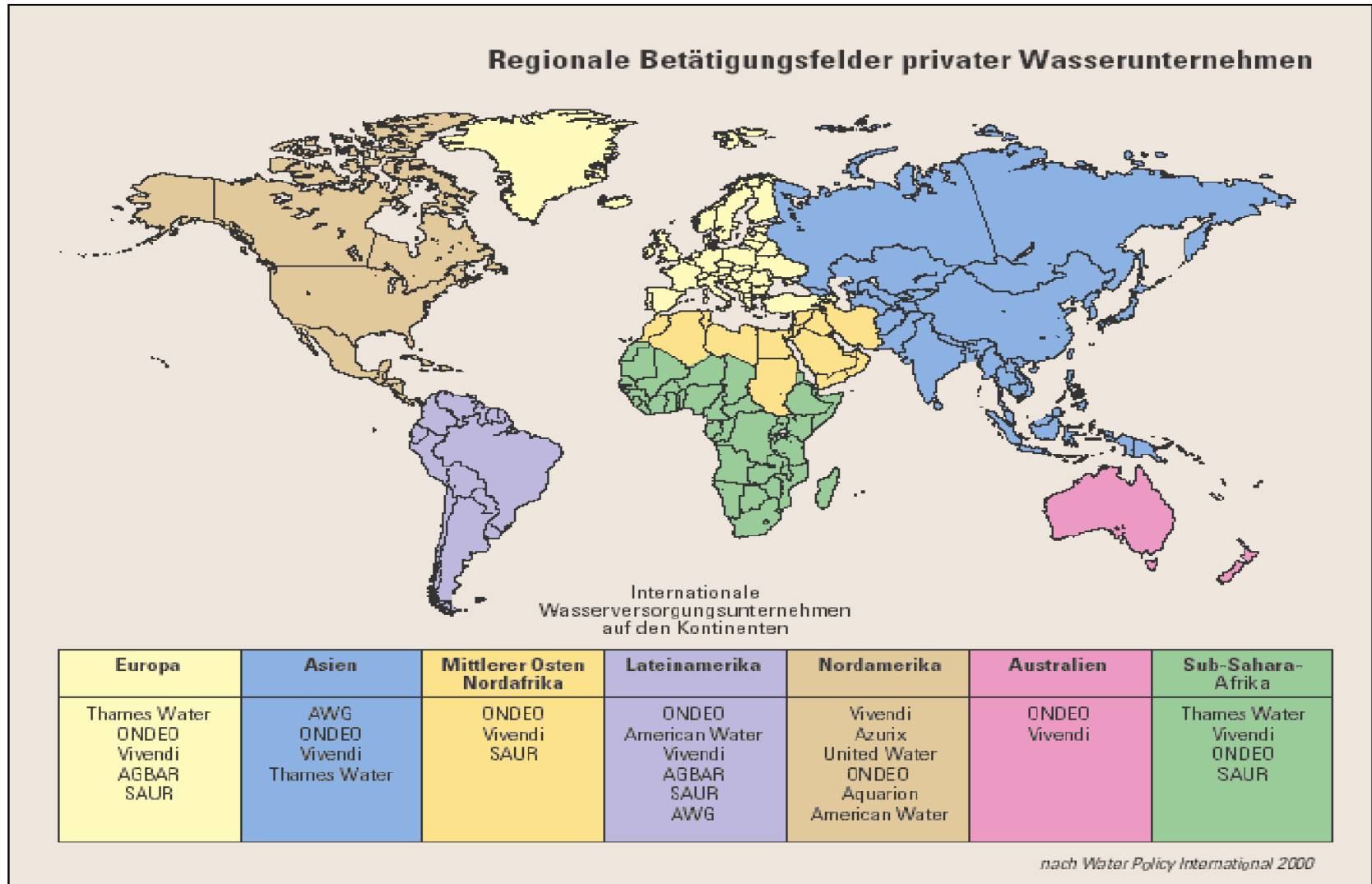


Source: Public Service Research Unit (PSIRU), University of Greenwich, 2000





Source: not specified

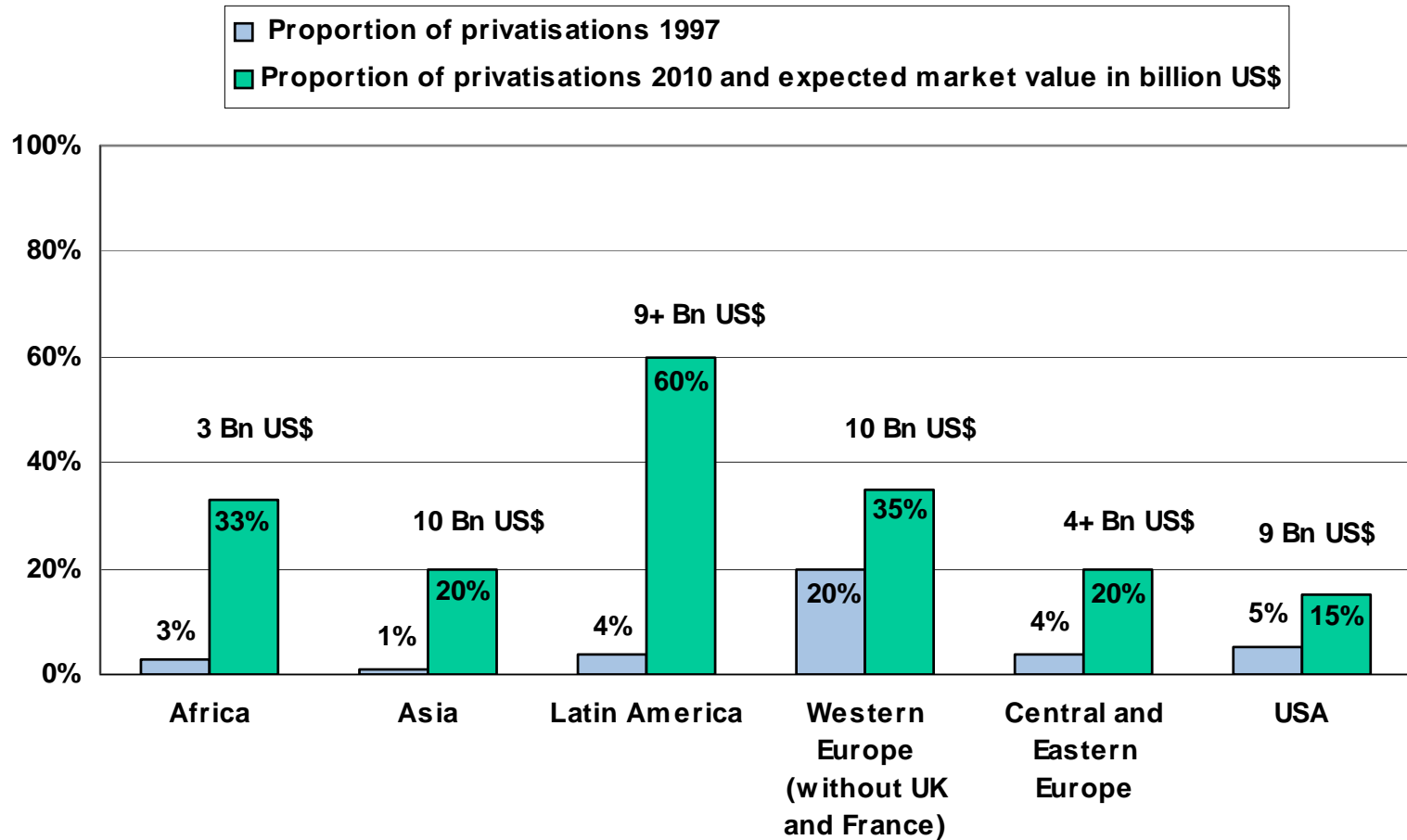


Source: German Parliament, printing matter 14/9200, chapter 7.5 water

Enterprise	Turnover in water sector [billion US\$] 1998/1999	Turnover in water sector [billion US\$] 2001	Turnover increasing rate [%] 1998/1999 – 2001
Ondeo (F)	4,8 <sup>1</sup>	8,8 <sup>2</sup>	<b>+83%</b> (acc. to Hall, [37] +110%)
Vivendi Water (F)	5,9 <sup>1</sup>	11,9 <sup>2</sup>	<b>+101%</b> (acc. to Hall, [37] +131%)
Saur (F)	2,3 <sup>1</sup>	2,2 <sup>2</sup>	<b>-4%</b> (acc. to Hall, [37] +9%)
Thames Water (D)	2,1 <sup>1</sup>	2,8 <sup>2</sup>	<b>+33%</b> (acc. to Hall, [37] +29%)
Anglian Water (GB)	0,5 <sup>1</sup>	1,0 <sup>2</sup>	<b>+100%</b> (acc. to Hall, [37] +80%)
Severn Trent (GB)	0,6 <sup>1</sup>	1,3 <sup>2</sup>	<b>+117%</b>

<sup>1</sup> Polaris Institute: by German Parliament – 14. legislative period, printing matter 14/9200, 2000 [24]  
<sup>2</sup> Polaris Institute: Global Water Grab; GATS ATTACK pamphlet series, January 2003 [64]

### Privatisations in water sector 1997 - 2010



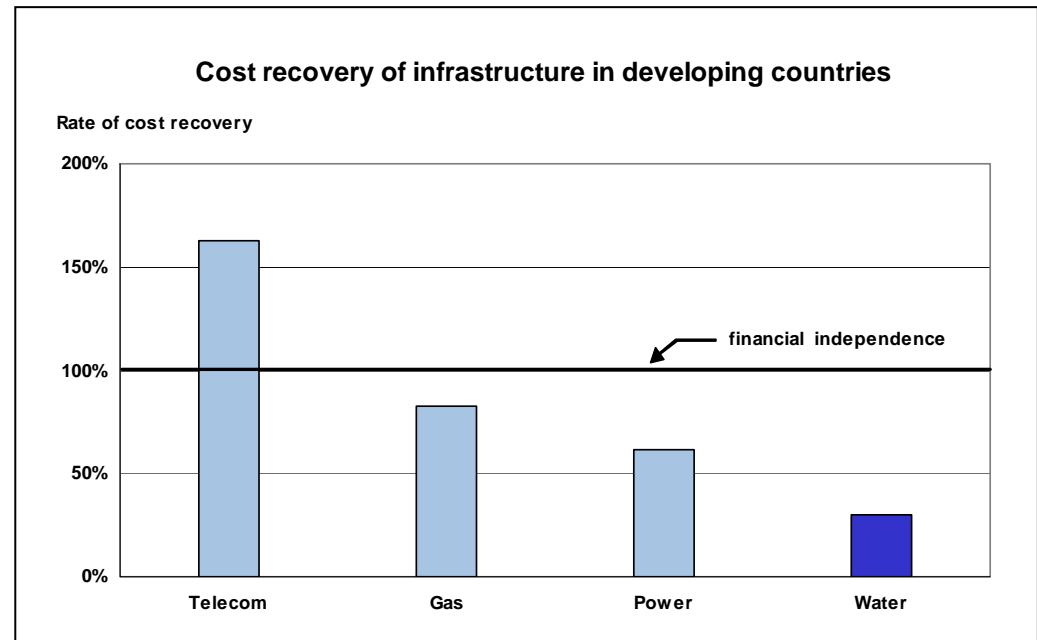
Source: Assumptions after Vivendi, Public Service Research Unit (PSIRU), University of Greenwich, 1999

## Pricing

$$\text{Costs} - \text{Subsidies} + \text{Profit} + \text{Taxes} + \text{Dues} = \text{Price}$$

### Further influencing factors:

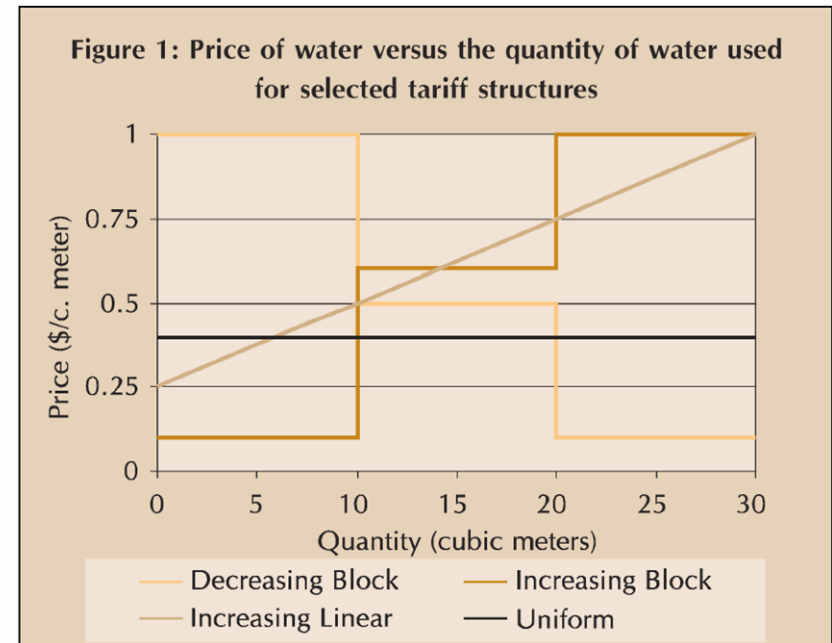
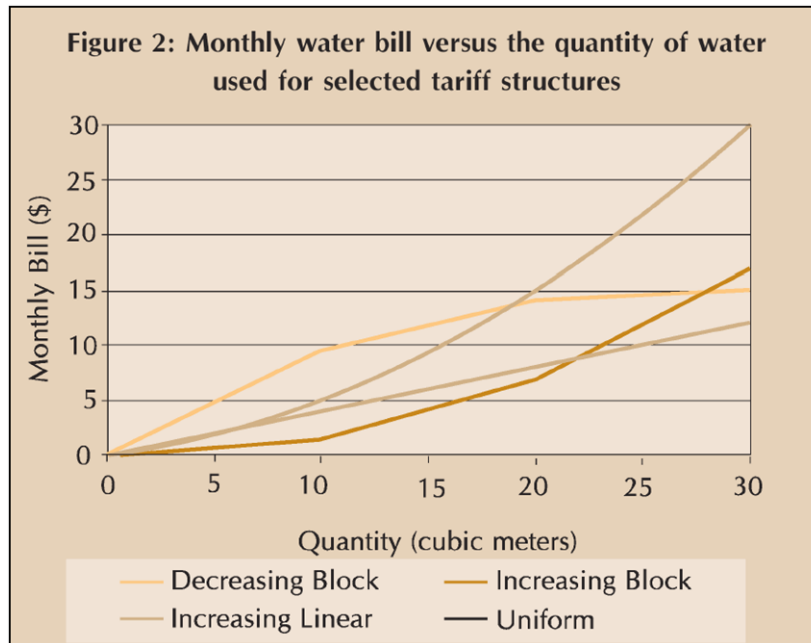
- Raw water quality
- Source protection
- Quality of water supply
- Quality of drinking water
- Supply reliability
- Quality of service



Source: World Bank, 2001

## Tariff structures in comparison

- **Single-part tariffs** (fixed charge and water use charge: uniform volumetric tariff, linear and increasing linear tariff, increasing and decreasing block tariff)
- **Two-part tariffs** (fixed charge + water use charge)
- **Seasonal and regional tariffs**
- **Water supply free of charge**



Source : Public-Private Infrastructure Advisory Facility (PPIAF), World Bank, World Bank Institute (WSP), 2002

## Frame conditions for international price comparisons

### 1. Basic conditions

- Geographical conditions
- Resource and environmental protection
- Settlement structure of regions
- Water use

### 2. Qualitative aspects

- Quality of drinking water
- Quality and sustainability of supply systems
- Supply reliability and quality of service

### 3. Tariff aspects

- Tariff structures
- Water consumption

### 4. Financial aspects

- Rate of cost recovery
- Amount of subsidies
- Proportion of water costs in living costs
- Taxes and dues
- Additional costs from buying bottled water
- Rate of inflation
- Generation of reserves

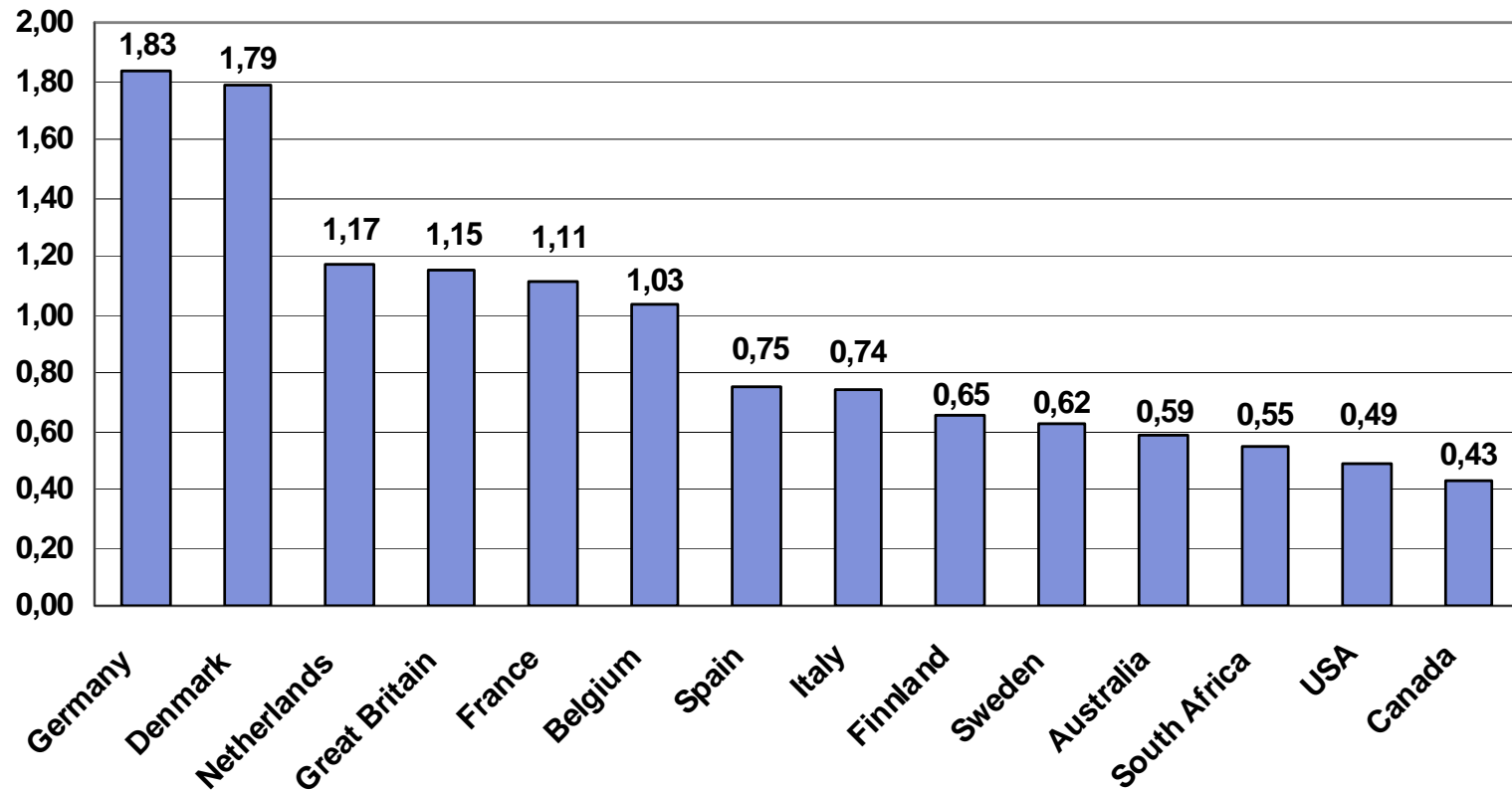
### 5. Social aspects

- Employment rate

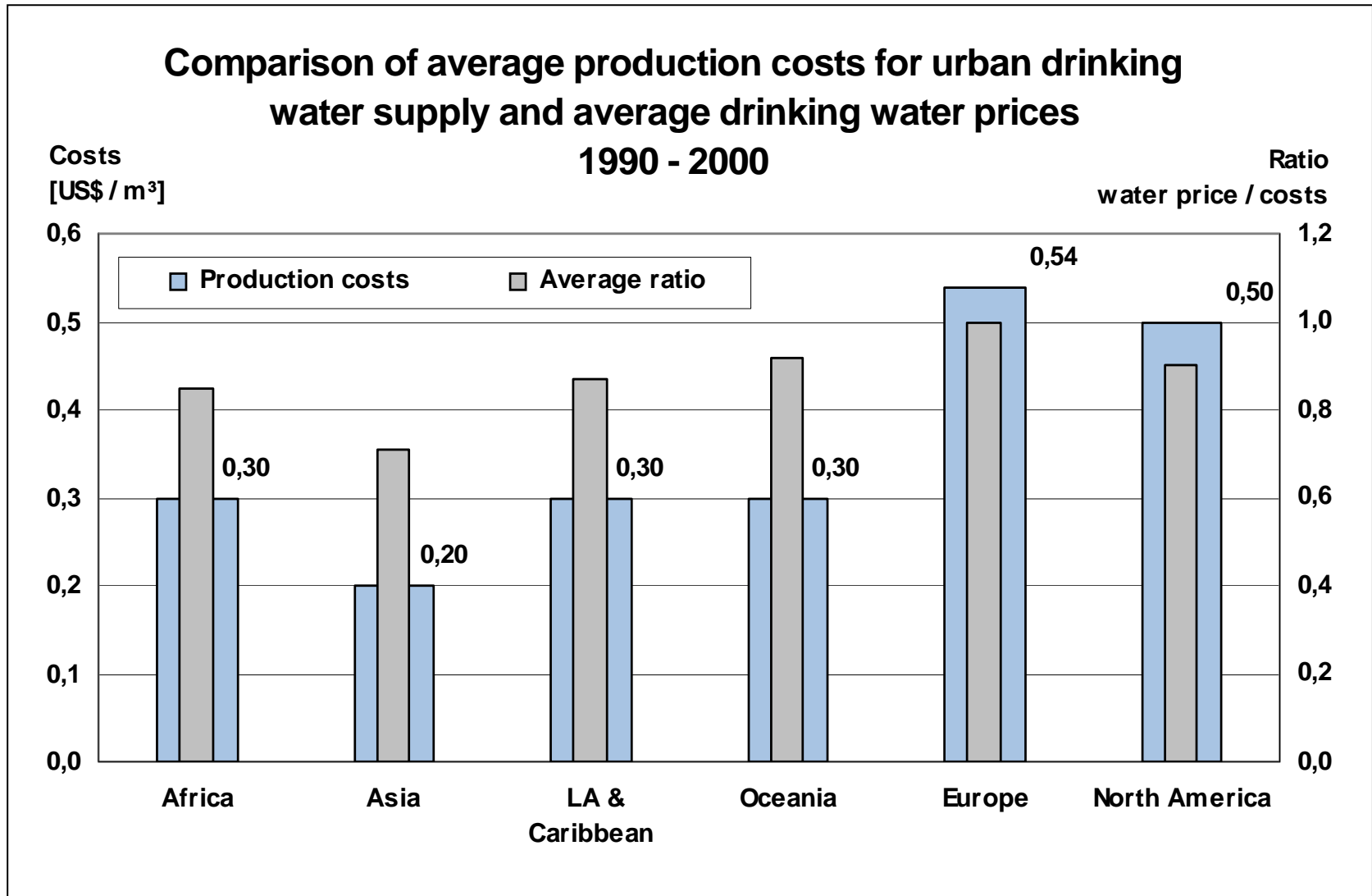
### 6. Statistical aspects

- Data base

## 27. Worldwide water price comparison by NUS 2003

[€/ m<sup>3</sup>]

Source: National Utilities Service, 2003



Source: BGW (2001); NUS (2003)

## Complexity of price comparisons shown in European water price comparison by German Federal Environmental Agency (UBA, 1998)

### Qualitative evaluation of impact factors

	DK	D	E	F	I	NL	UK
<b>Water prices</b>	-	+	-	0	-	+	0
<b>Rate of cost recovery</b>	+	+	-	0	-	+	(0/+)
<b>Quality of drinking water</b>	+	+	-	0	-	+	0
<b>Quality of drinking water supply</b>	+	+	-	0	-	+	(0/ -)
<b>Costs for raw water extraction</b>	-	0	+	0	+	0	0

Source: Umweltbundesamt (UBA, German Federal Environmental Agency), 1998

# Thank you for your interest!

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