



EUREAU

Cyprus 12-13 May 2005



FROM RESEARCH TO POLICY MAKING

Water recycling and reuse

A water scarcity best practice solution

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EUREAU water recycling & reuse group

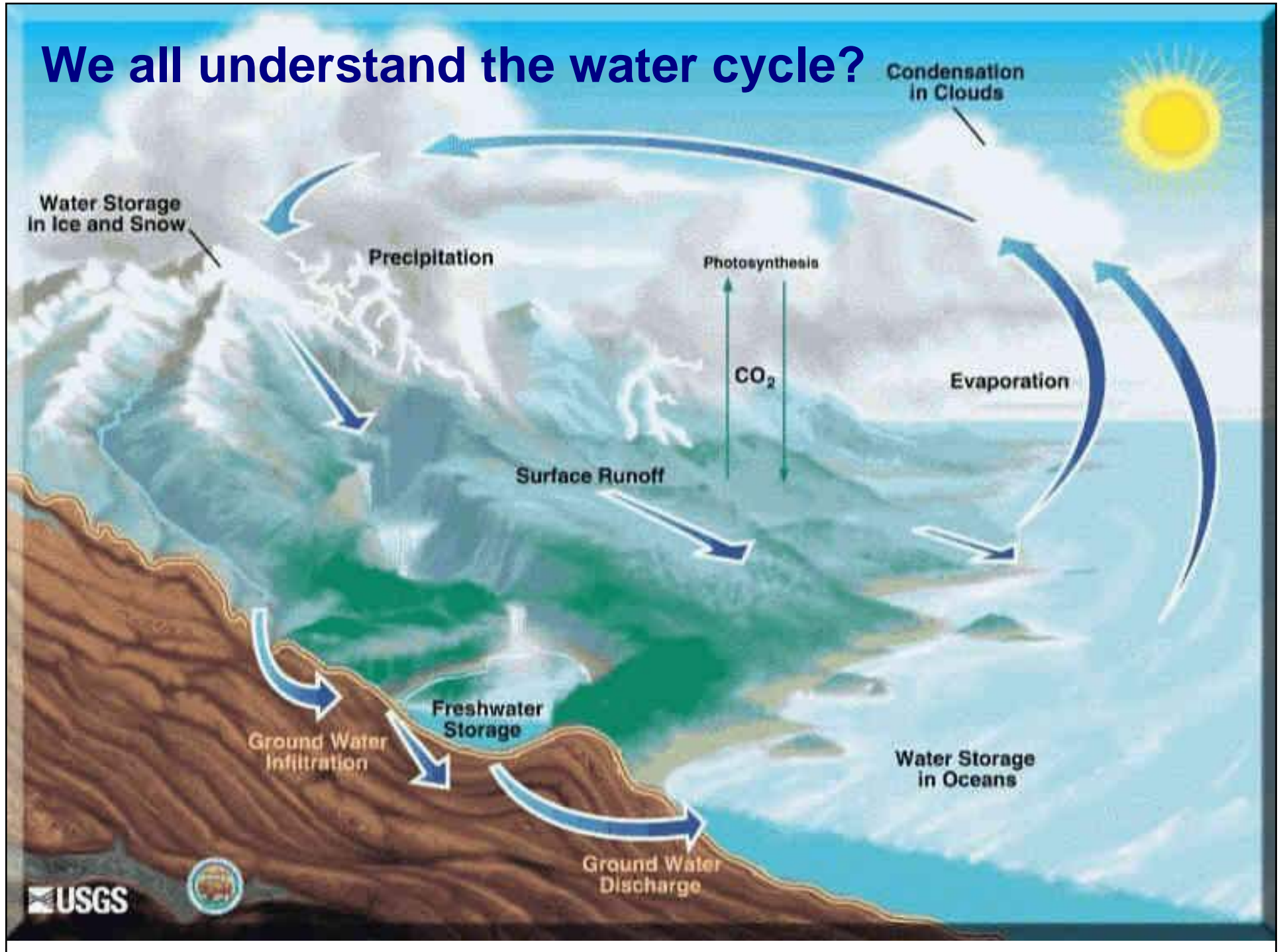
*EUROPEAN UNION OF NATIONAL ASSOCIATIONS OF
WATER SUPPLIERS AND WASTE WATER SERVICES*

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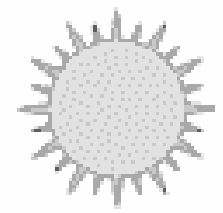
- ✓ **What is water recycling and reuse?**
- ✓ **Applications**
- ✓ **Status & needs in Europe**
- ✓ **Benefits**
- ✓ **Recommendations**

We all understand the water cycle?

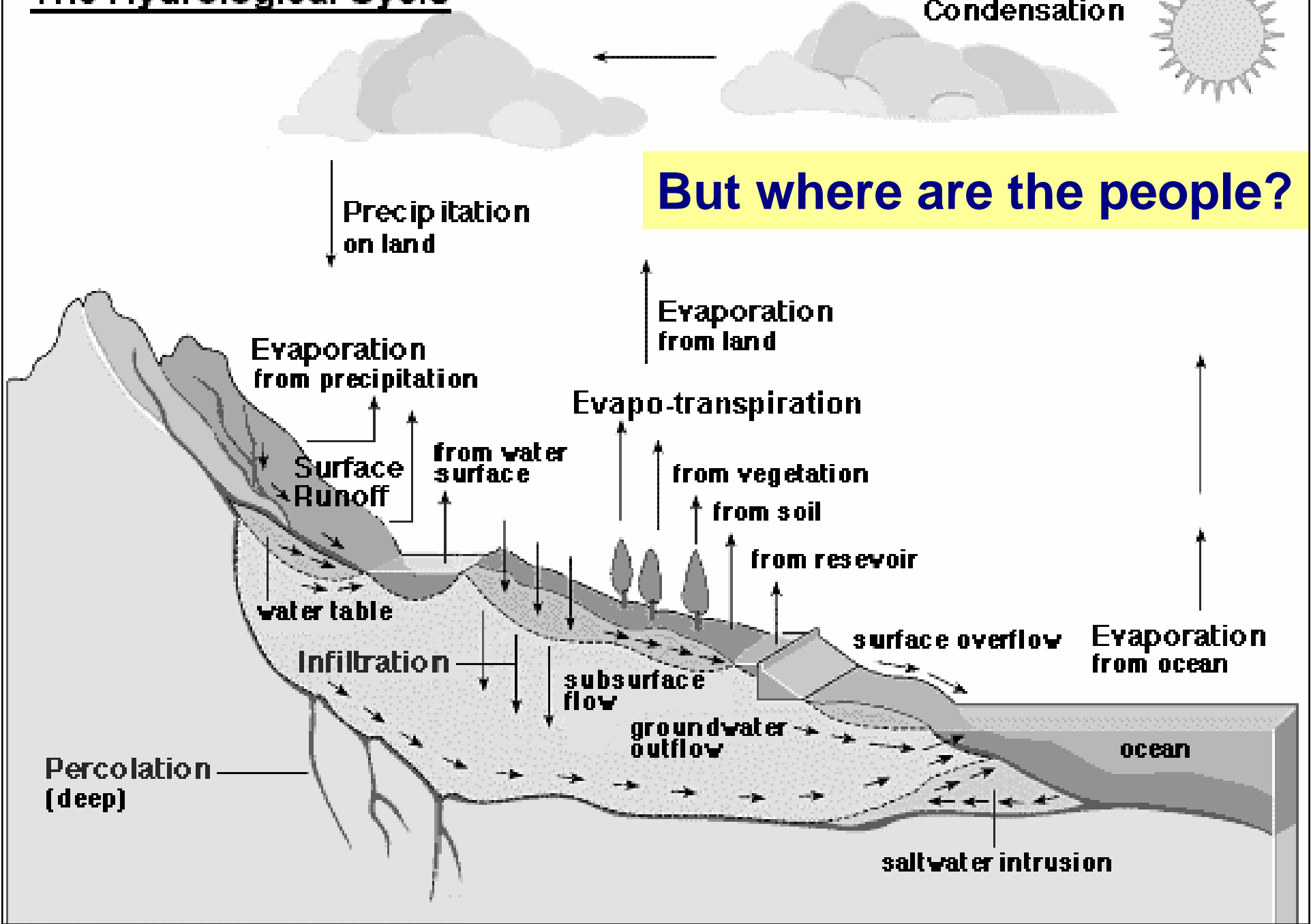


The Hydrological Cycle

Condensation

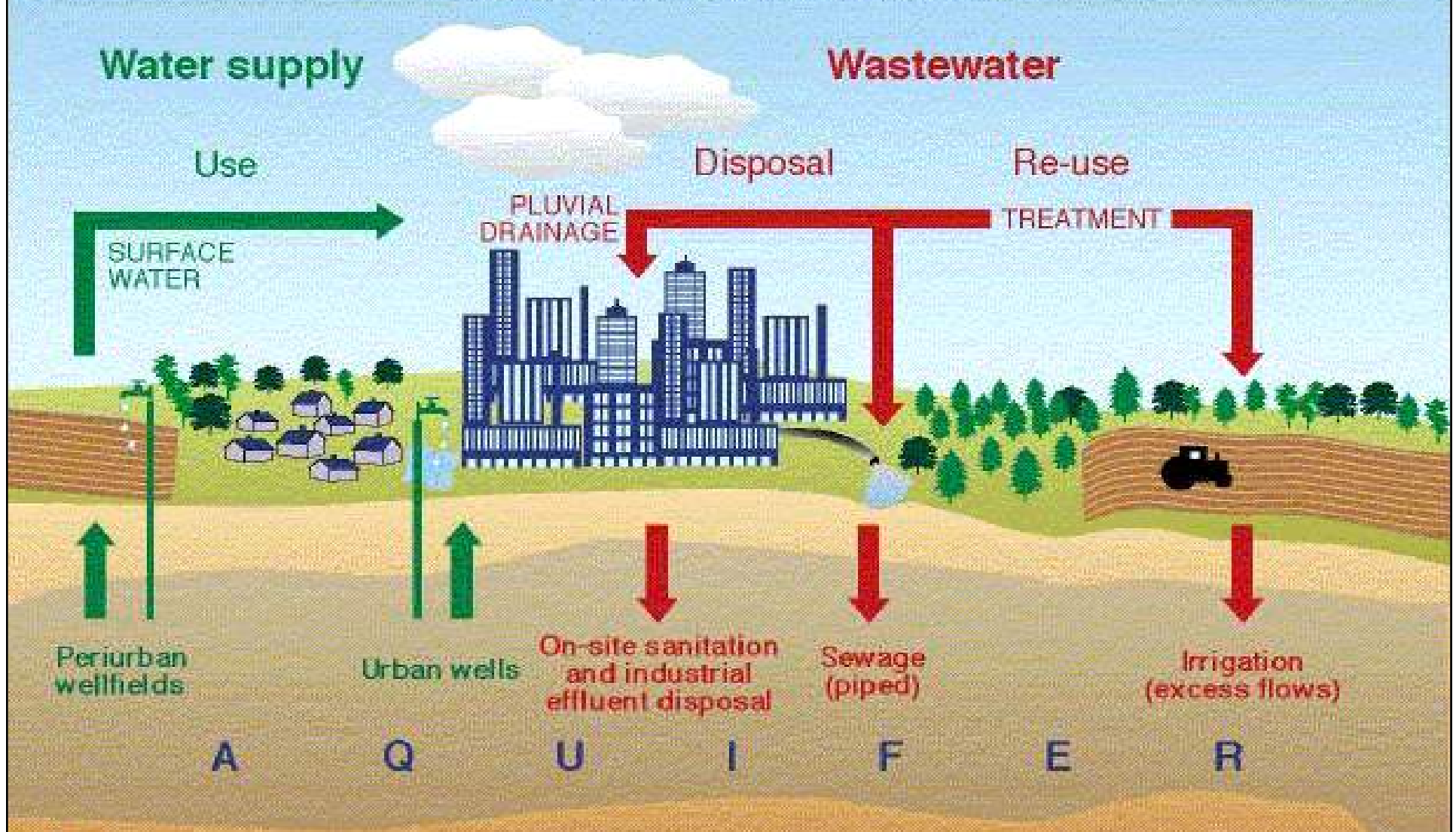


But where are the people?



The Urban Water Cycle

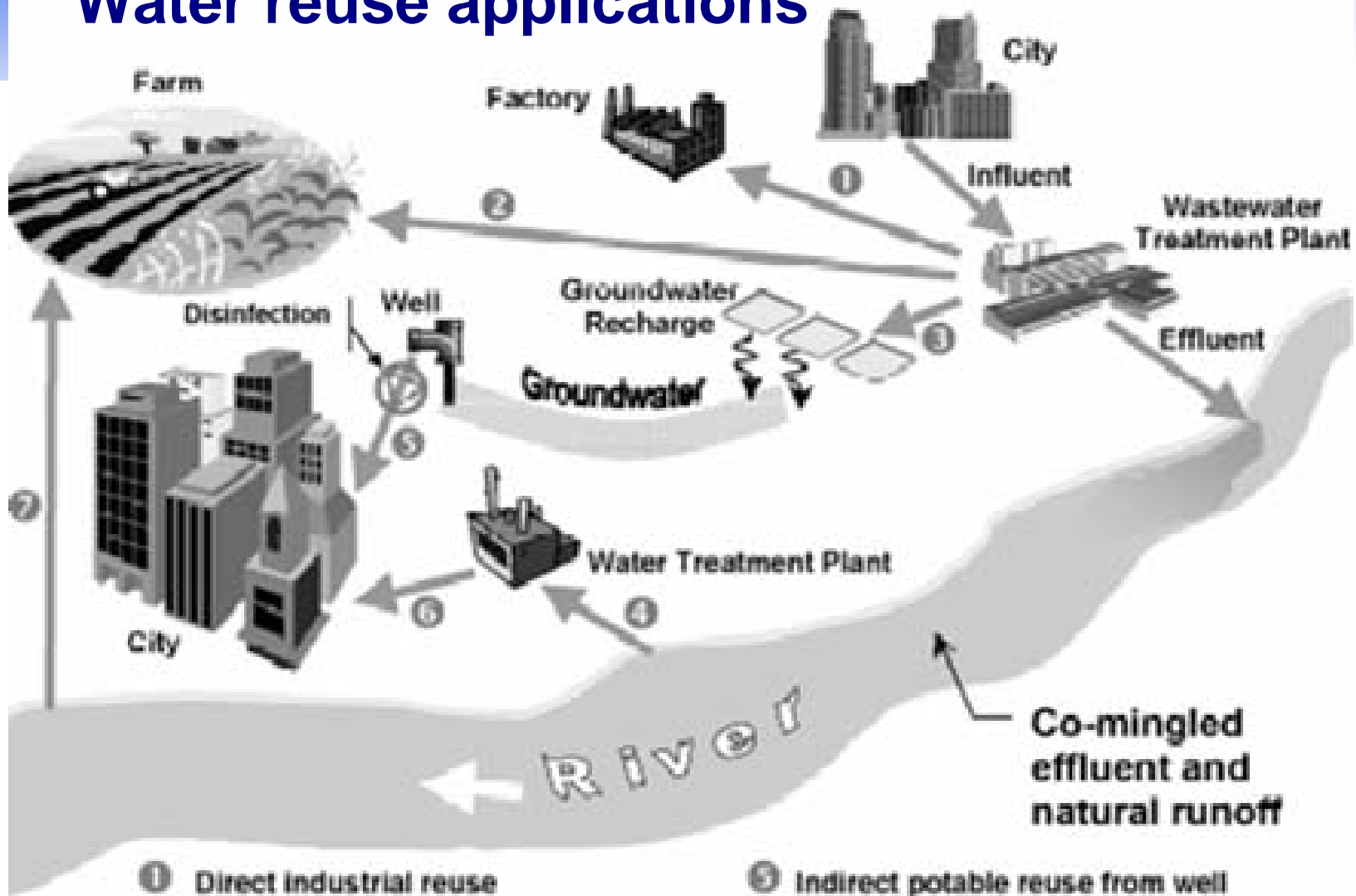
Man's Impact on Groundwater



Separation of potable and wastewater to protect public health

STEPHANE DUBOIS
APRIL 2002

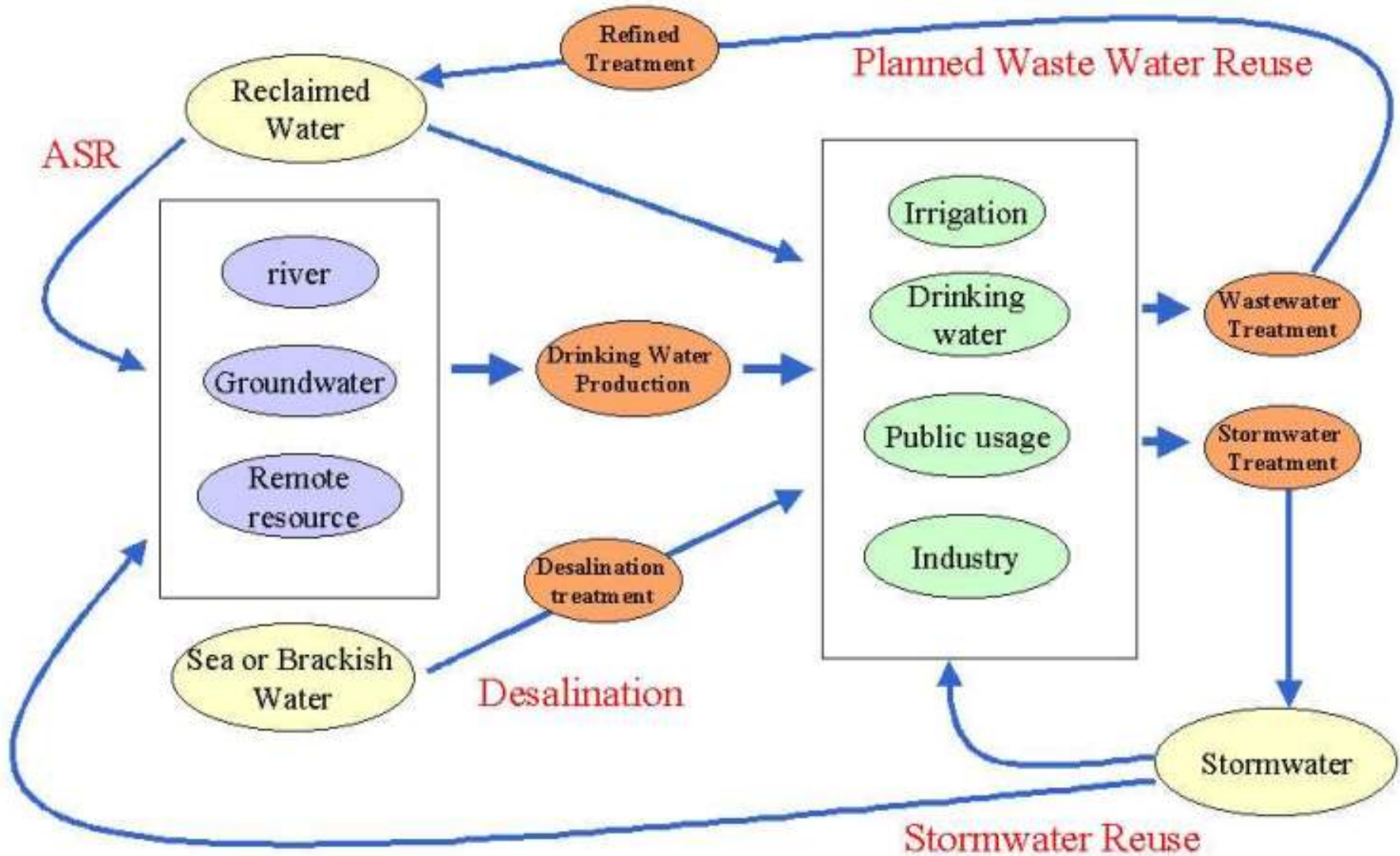
Water reuse applications



- ① Direct industrial reuse
- ② Direct agricultural reuse
- ③ Groundwater recharge
- ④ Indirect potable reuse from river

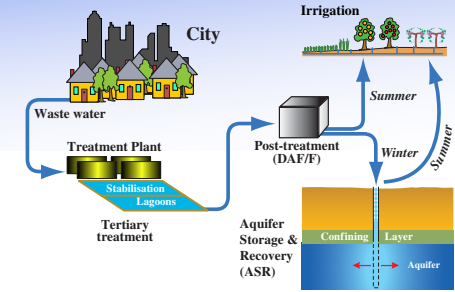
- ⑤ Indirect potable reuse from well
- ⑥ Potable water supply system
- ⑦ Indirect agricultural reuse

The water cycle with water reuse

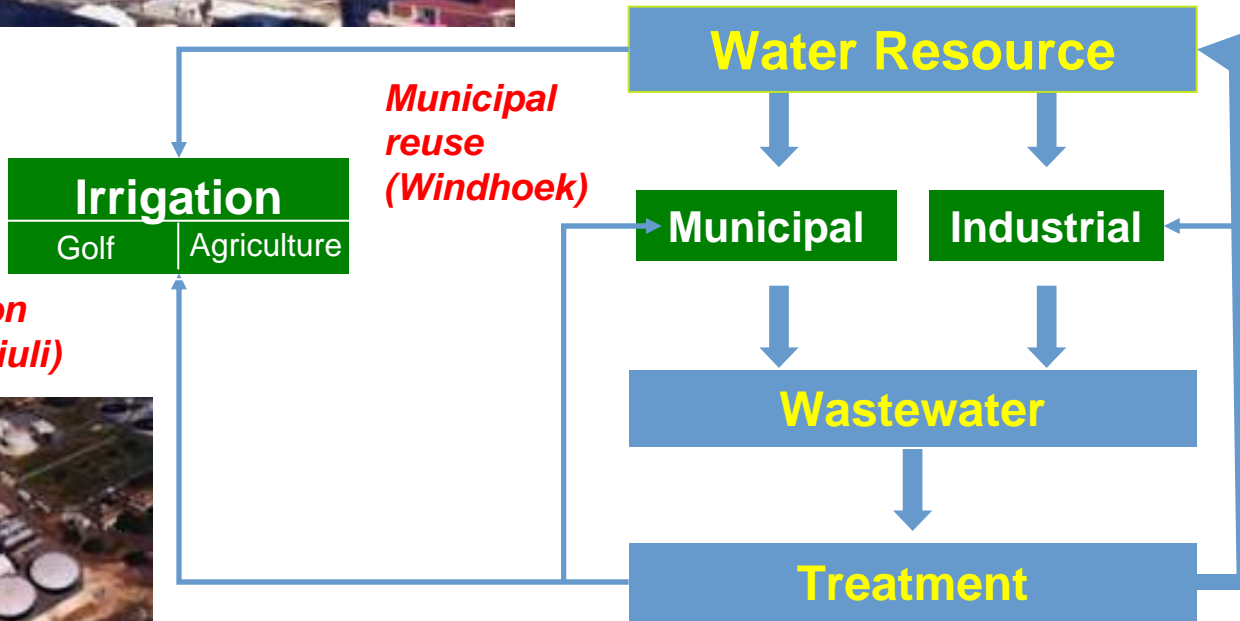


Ref JS Thomas

Applications



Reuse for aquifer recharge (Berlin & Adelaide)



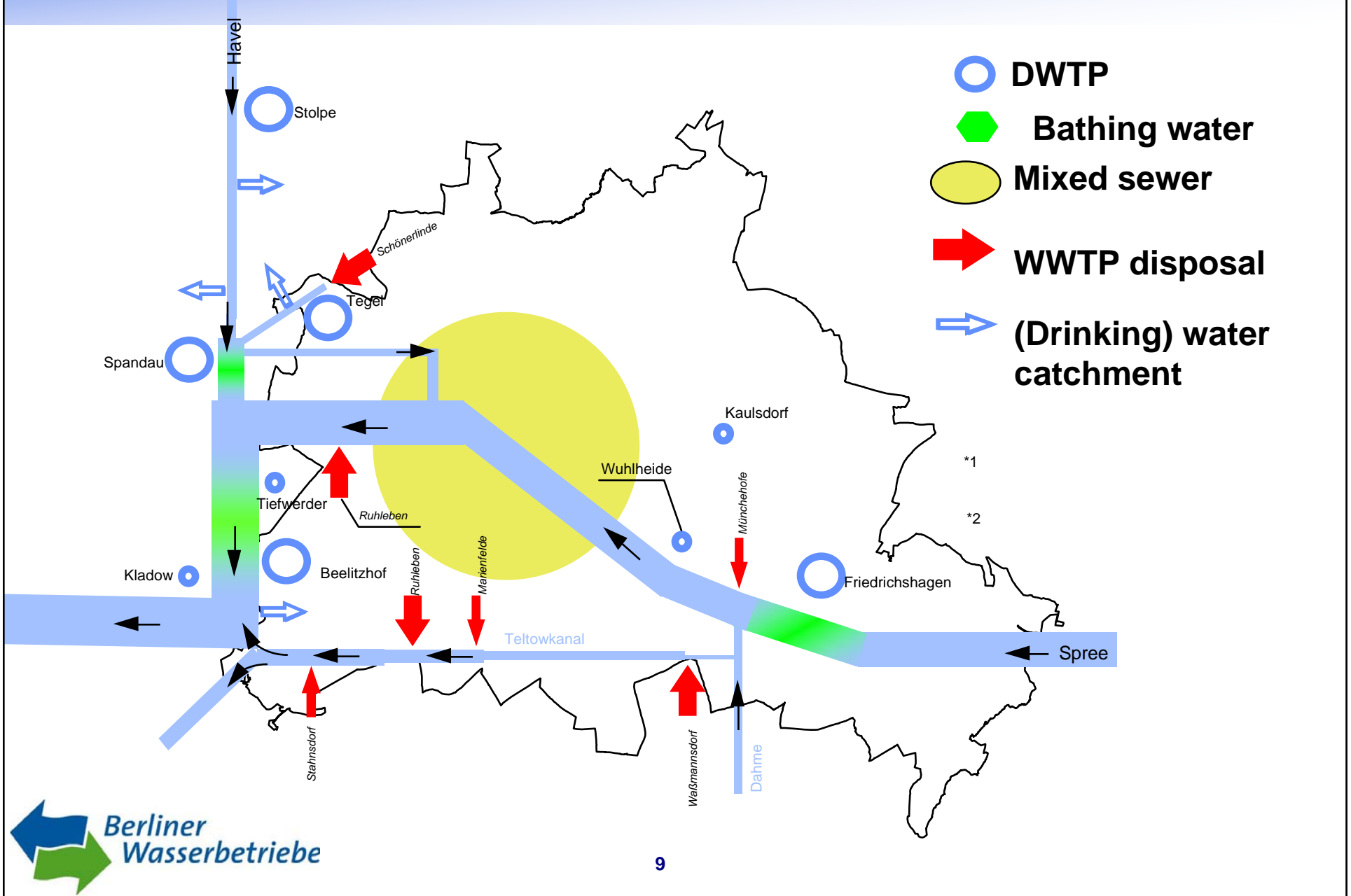
Municipal reuse (Windhoek)

Industrial reuse (Durban)

Irrigation (Honouliuli)

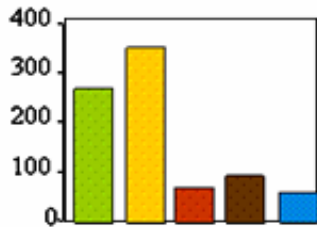


Local water cycle in Berlin 70 % internal recycling

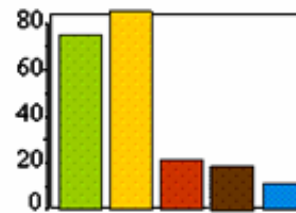


Number of reuse installations (3300)

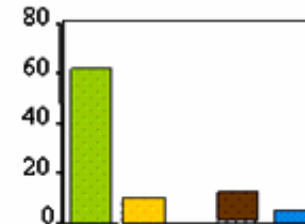
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North America



Europe

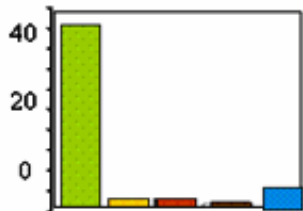


Mediterranean Region & Middle East

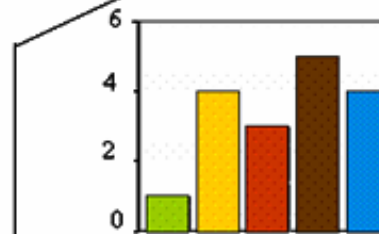
800 US projects : 2372 Mm³/yr (300 M total population) 200 EU projects : 700 Mm³/yr (470 m total population)

Application

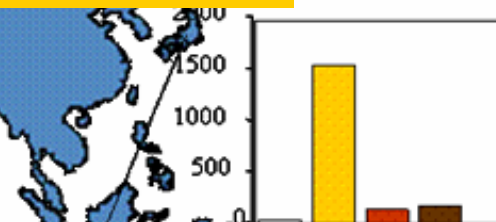
- Agriculture
- Urban
- Industry
- Mixed
- Not available



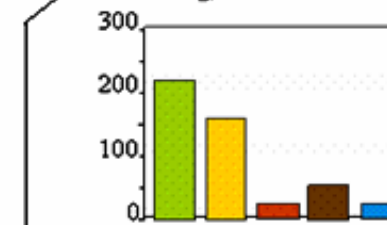
Latin America



Sub-saharan

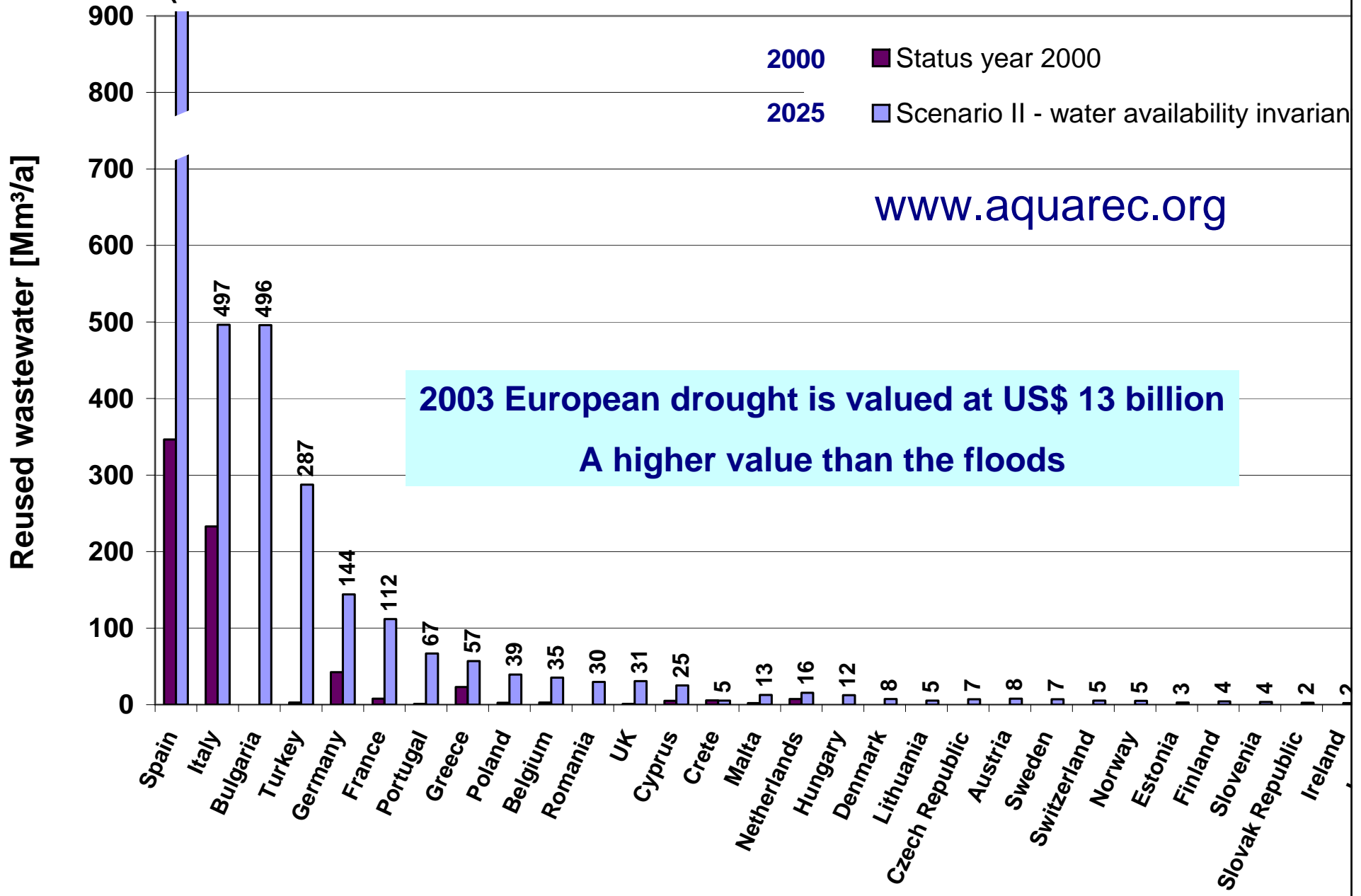


Japan



Oceania

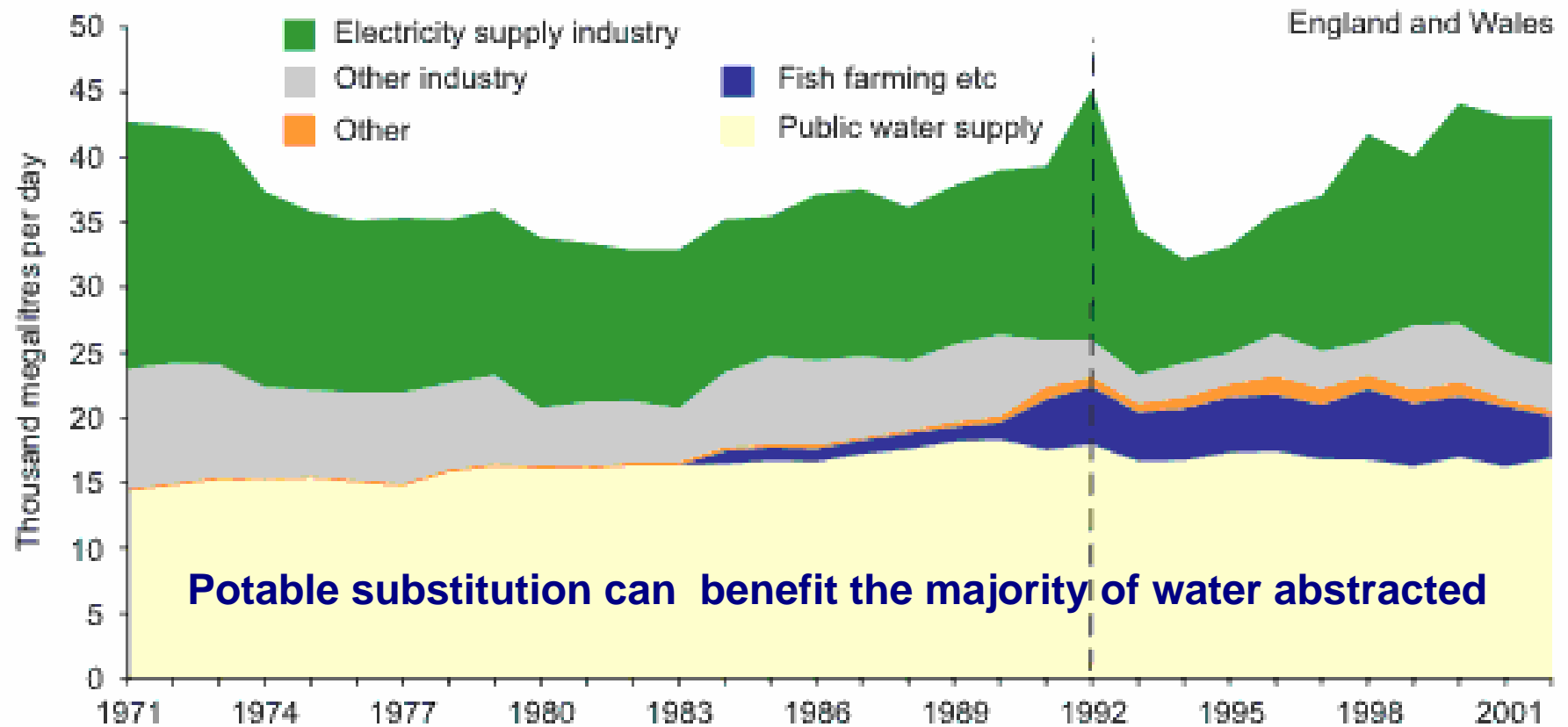
Growth forecast in water reuse



Abstraction for public water supplies is 30 to 70% not 18%

If we agree that cooling water is returned immediately to the surface water

Figure 12: Abstractions from non-tidal surface water and groundwater by use: 1971-2002



Source: Environment Agency

Benefits

- ✓ **Increased water resource availability**
 - Potable substitution
 - Control over abstraction of surface & ground waters
- ✓ **Reduced nutrients to the environment**
- ✓ **Valuable drought proof resource**
- ✓ **Increases land value**
 - Irrigation
 - Brownfield & urban developments
- ✓ **Reduces production costs**
- ✓ **Supports tourism**
- ✓ **Integrates with all parts of the water cycle**
- ✓ **Cohesion tool for all water stakeholders as water reuse bridges traditional water divisions**

Chinese Integrated Water Cycle Management (IWCM)

(Dr Wu Jisong, Executive Director, Chinese Ministry of Water Resource presentation at IWA Marrakech 2004)

- ✓ Changed water strategy and planning to IWCM
- ✓ Water reuse is a core part of IWCM
- ✓ Creating opportunity by reducing the problems of overlapping institutions and regulation.
- ✓ Implemented demonstration projects to prove benefits and build local experience.
- ✓ Advocating that all types of wastewater treatments shall take reuse into consideration.
- ✓ 82 reuse projects are included in the 10th five year construction plan.
- ✓ IWCM is a key strategy to solve water stress for 1.3 billion Chinese by 2020 (aprox' 3 x EU)

Recommendations to reduce water scarcity

- ✓ **Water reuse benefits and risks need to be understood**
- ✓ **Treated wastewater needs to be valued**
- ✓ **Clarify the meaning of “treated wastewater shall be reused whenever appropriate” in article 12 UWWD**
- ✓ **Draft European guidelines and best practice.**
- ✓ **Create interest through financial incentives**
- ✓ **Use the cohesion opportunity of water reuse to reduce water stress and build the European water community and export opportunity**

200 water reuse projects without guidelines or best practice

Costa Brava

London

Reuse for industry

Berlin

Torreelle

Barcelona

Chalkis

NOAA

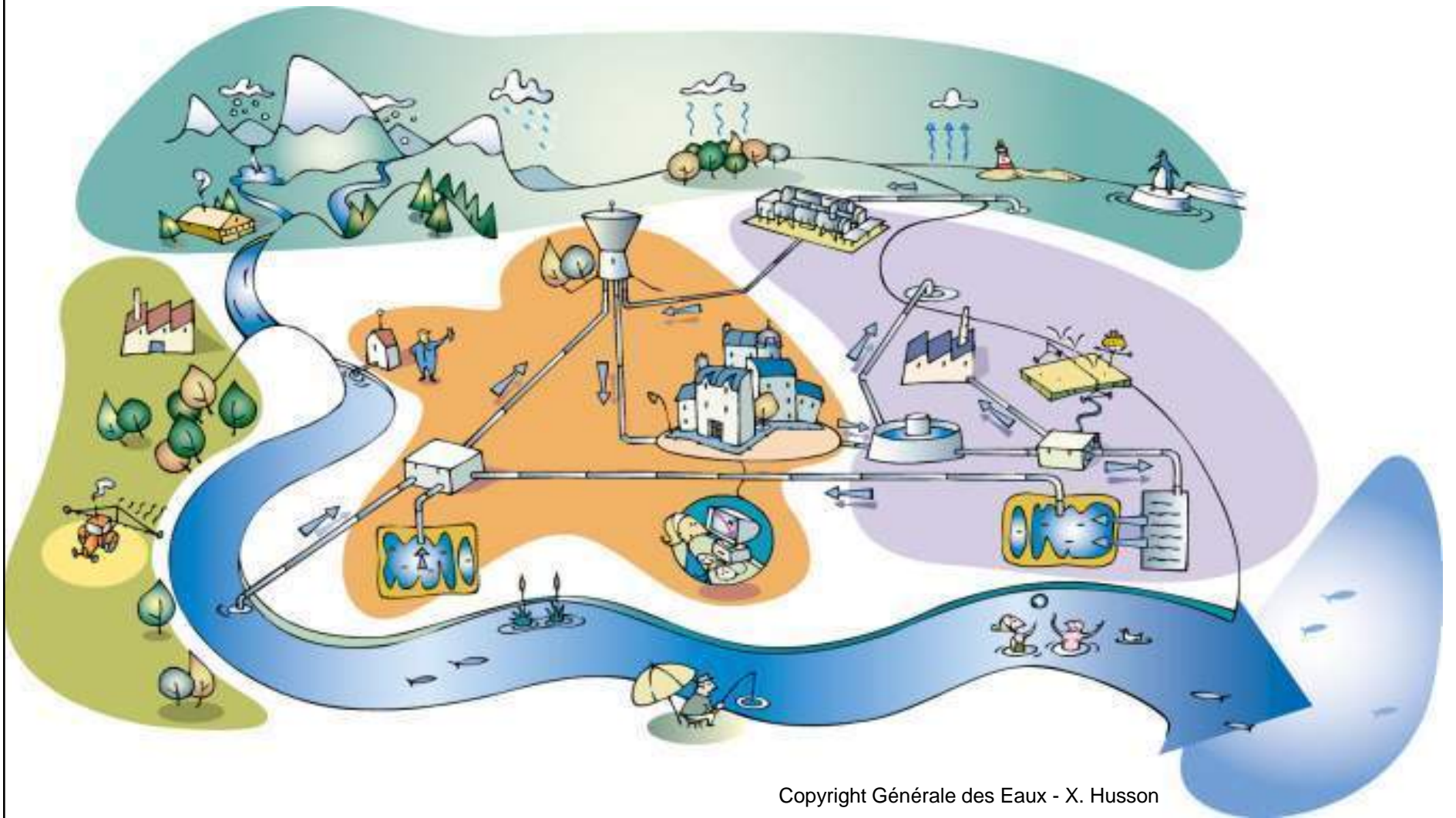
EVOLUTION OF RECLAIMED WATER PRODUCTION IN THE CORTA BRAVA

Year	Production (m³)
1980	0
1985	0
1990	0
1995	0
2000	~1,000,000
2005	~2,000,000
2007	~4,000,000

REUSED WATER DEMANDS

- REGULATED FLOODING SYSTEM
- CONCENTRATION OF FARM HOUSES
- CONCENTRATION OF HABITATION AND SERVICE AREAS
- ANTI-SALINIZATION BARRIERS

Thank you



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