



# **Ethical Issues of Water Management**

# INTRODUCTION

- 3% is fresh water →  
1% is running water  
2% is immobilized in the Poles\*
- The main issue with water management is not about the lack of water, but about the distribution problem of water around the world.



- 1,4 billion people live with no access to suitable drinking water (25% of the world population)
- 2,9 billion (around half of the world population) don't have basic sanitary service and
- 6000 children die every day due to this problem.

- UN Universal Declaration of Human Rights of 1948 and the proclamation of the 1977 UN Water Conference claimed that “all people. . . have the right to have access to drinking water in quantities and of a quality equal to their basic

- *Principle of human dignity and equality.*

- *Principal of precaution*

- sustainable development
- technology or conservation?

“The Earth is one but the World is not “

- political, social and economical dimer



Do we have the right to have access to as much water as we choose?

Society must first ensure that appropriate prioritization of water access is put in place.



“Who, if anyone owns the water? . . . in trying to apply our concept of ownership to a resource whose very nature runs contrary to the idea, we have a recipe for conflict.”

Conflicts in Water Management:

- present and future generations,
- between human and non-human
- between human competing users



- Ecosystems are linked, maintained and sustained by water.
- Water availability is often a key controlling factor in maintaining biodiversity.

Agenda 21 – Rio 1992 “ since water sustains all life, effective management of water resources demands a holistic approach, linking social and economic development with protection of natural ecosystems.”

“ human use of water should not individually or cumulatively compromise the long term sustainability of aquatic and associated ecosystems”



# WATER ETHICS

Ethics are moral guidelines for human behaviour

▼ “Why should I care?”

- *Utilitarianism*
  - *Consequentialism*
    - *Intrinsic*
      - *Theistic*

# UTILITARIANISM

- ▲ The environment is useful for us
- ▲ Water is implied in the right to life, food and health
- ▼ Aridity
- ▼ Pollution
- ▼ Modification of climate
- ▼ Conflicts
- ▼ Attribution of money value
- ▼ “Us”?

# CONSEQUENTIALISM

- ▲ Consequences of human behaviour
- ▲ Responsibility >>> human being
  - >>> future generations
  - >>> ecosystem
- ▼ Future not quantifiable
- ▼ Non human, non living things not quantifiable



# INTRINSIC

- ▲ Respect for the environment (Aldo Leopold)
- ▲ Conserving environment
- ▲ Use and not exploitation
  
- ▼ Moral issue
- ▼ Use or exploitation?

# THEISTIC

▲ Humans, animals, inanimate nature are creatures of God

▲ Responsibility

▲ Christian community

▼ Religious issue

▼ Christian community

# WATER MANAGEMENT



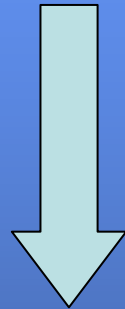
You don't miss your water until your well runs dry

# **GOVERNAMENT ROLES**

- 1. Monitoring prices in connection with different costs (i.e. transport costs to irrigation and water supply and purification costs)**
- 2. Informing users (especially women) about their rights for a conscious choose about water uses**
- 3. Proposing technical and moral informations**

# INTERNATIONAL CO-OPERATION

It aims to harmonize the relationship between countries which share the same water resources because of their lengthiness



to avoid

## CONFLICT PROBLEMS

Many countries, in fact, depend on the one where the flow originates. In this case dams, withdrawals to irrigate, industrial pollution, salinization, deforestation and soil erosion can decrease the amount of water for the depending countries. It could be a great motive of international conflicts, especially if the involved nations have military potential.

# HOW TO PREVENT CONFLICT PROBLEMS

The international community has proposed a plan for regulation of shared water

- ✓ FAO (Food and Agriculture Organization) has identified many treaties about non-navigational waters based on rights, needs and efficiency
- ✓ United Nations Convention on Non-Navigational waters gives a leading law to share fresh water taking in consideration geographic, economic, ethical notions.

# **WATER FRAMEWORK DIRECTIVE 2000/60/CE**

**Takes in consideration every kind of water but the sea one**

- **Surface waters**
- **Underground waters**
- **Costal waters**

**It aims to manage, by a right way, the different realities of hydrographical areas:**

- **Restoring good water condition for every European Union State within 2015**
- **Protecting and improving water use**
- **Promoting sustainable water use and cooperation between different countries, fixing common methods for water helthiness**
- **Ensuring and equal distribution**
- **Monitoring prices**

# INDUSTRY

- Water is the main component of industrial production
- Industrial development doesn't mean pollution increase.

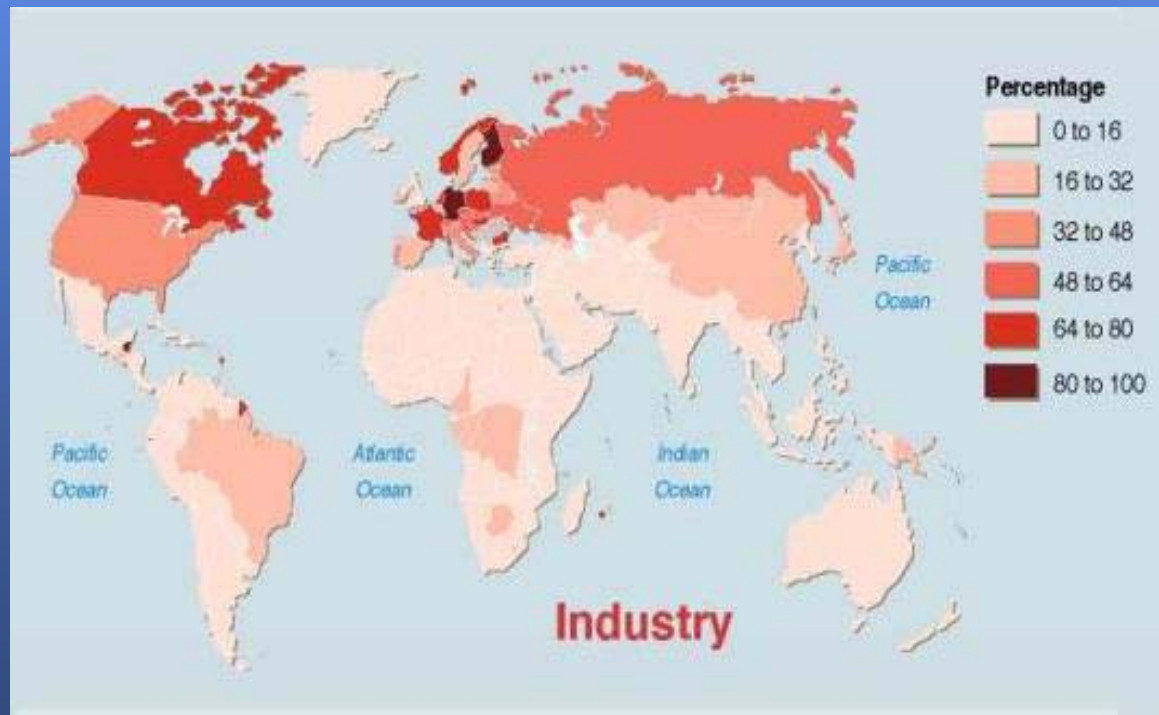


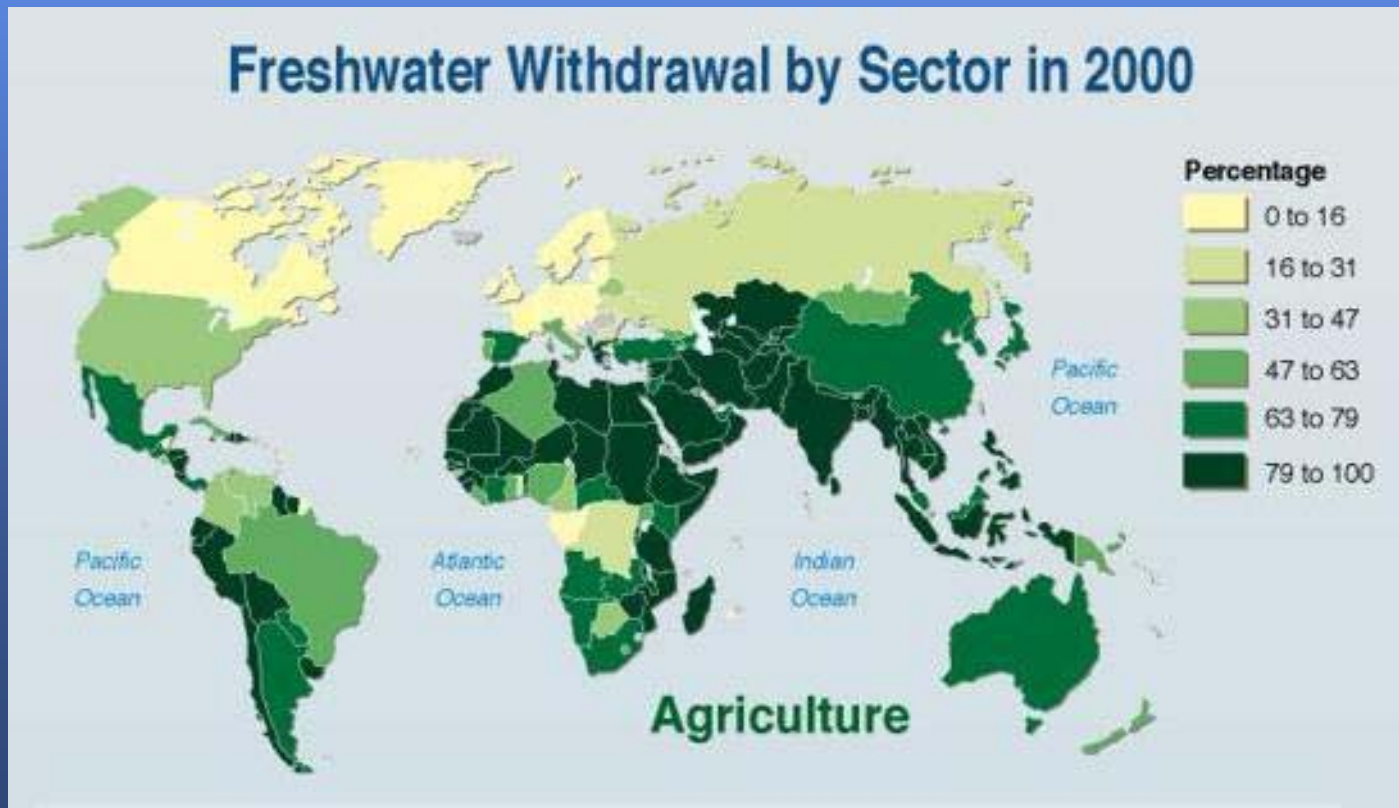
Fig. - Freshwater withdrawal in 2000



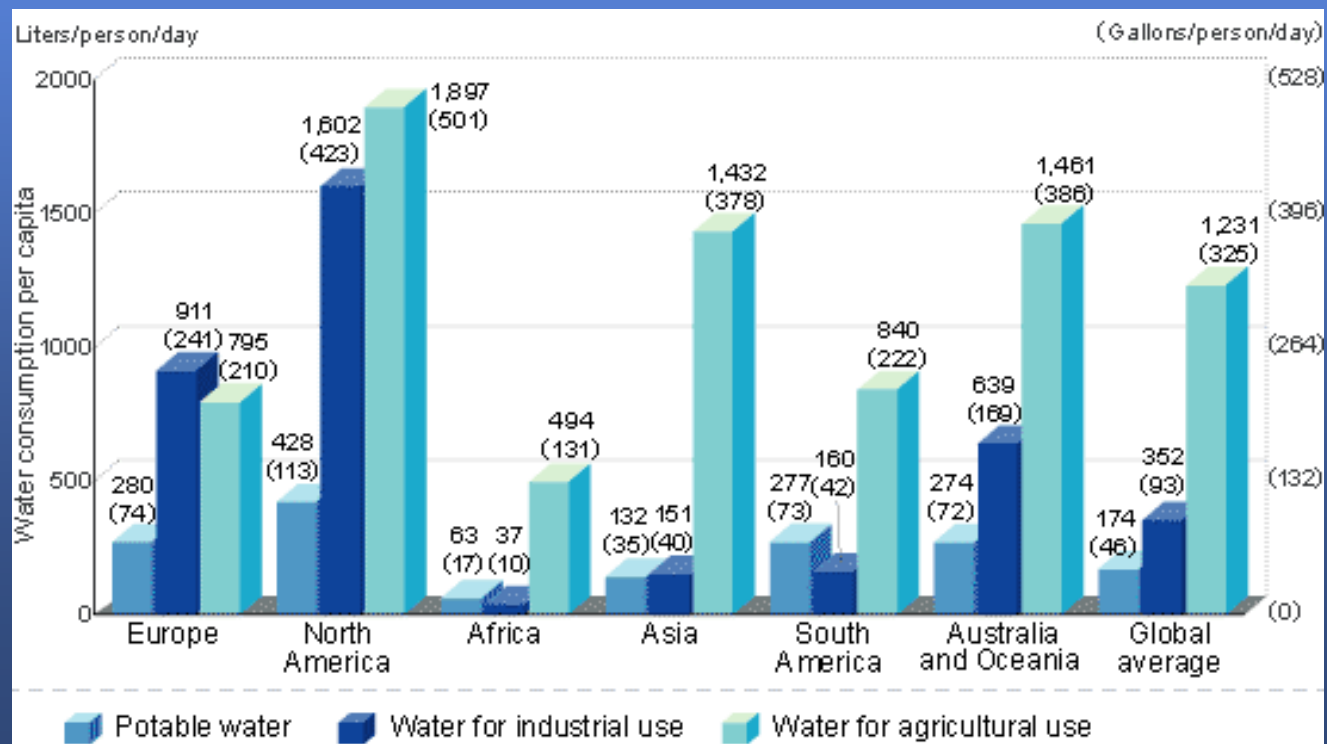
- Industry may then evolve:
  - new procedures, such as “clean” industries and recycling water
  - new services such as cheaper desalinization
- But...
  - The alternative must be lucrative
  - The ethical issue of water have to pass by the implementation of laws and economical benefits

# Agriculture and food production

- Agriculture defines a fundamental and basic life standard to the world population



- The biggest problem is alarming: agriculture is the main water consumer.
- Agriculture is less profitable, comparing to industries



- Limits:

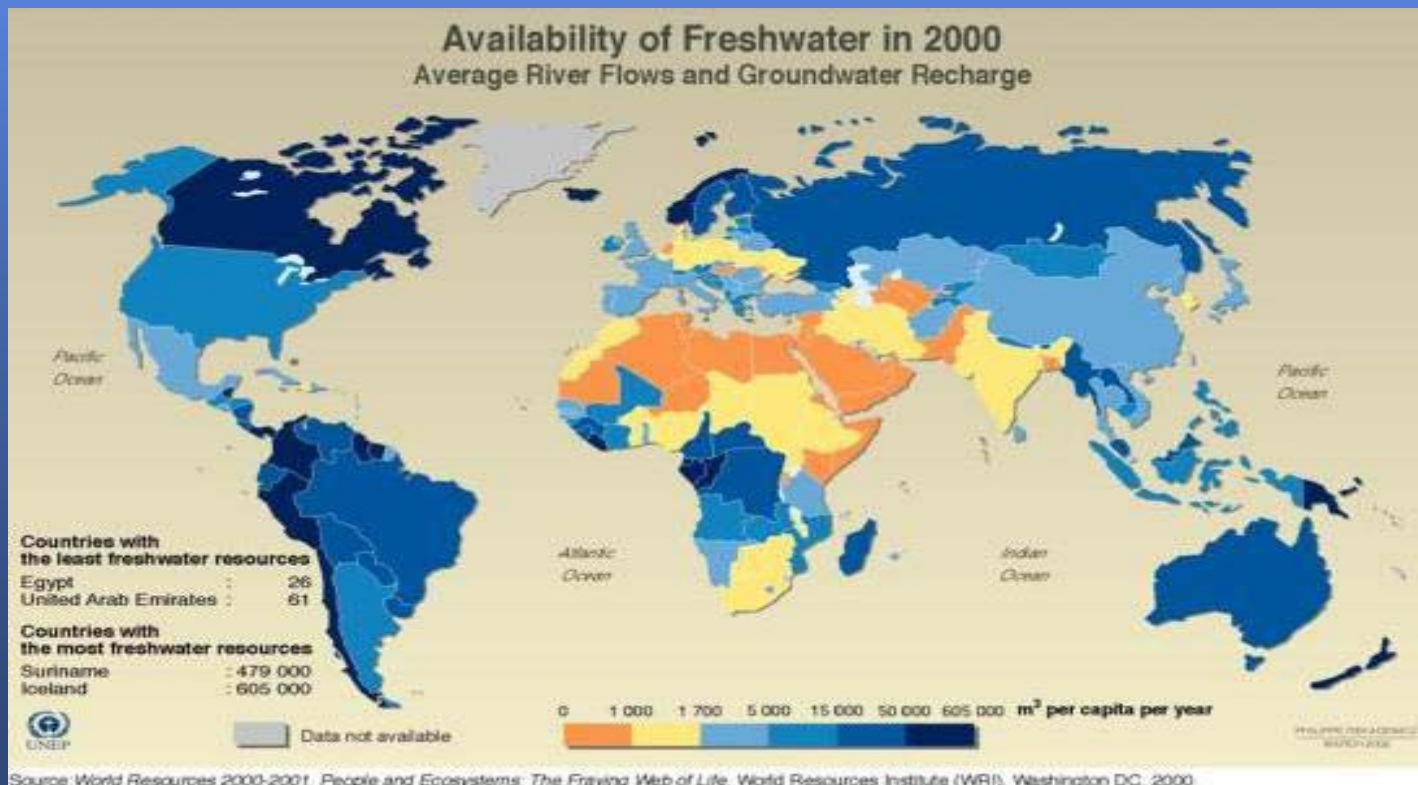
- Scarcity and the improper management of water may mean imposing boundaries to the food production
- It will affect seriously countries with big population density and those who already lack water



In the lack of a valuable good, there will be a lot of social tension and it could bring us to world wide conflicts

# Groundwater

- The use of groundwater increased considerably, mostly in areas of water scarcity



- The depletion of the subterranean water reserve can have consequences:
  - Water founts and courses may disappear or be contaminated by agro-industrial chemicals or even salt water.
  - Soil humidity decreases which influence the disappearance of some kinds of vegetation and animals that depend of that vegetation.
  - Microclimates change because of the decrease in evapotranspiration.
  - Diminution of irrigation for agriculture that is dependent of these reserves, and the food production and the local demographic growth falls.

- Should we explore subterranean water using its present value although creating a conservationist sensibility about the water?
- Or should we give it a potential value to our next generations?

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THANK YOU FOR YOUR ATTENTION



# Study Case

Alqueva is the biggest European artificial lake located in Baixo Alentejo, Portugal, in the rivers Guadiana e Degebe. The goals of the project were:

- To form a water reserve that supplies the districts of Évora
- To produce electric energy (for the National electric network)
- For agriculture use.



Until 2025, about 1800 million euros will have been invested in Alqueva. The energy produced serves 300 thousand people, and in agriculture it supplies 110 thousands hectares of area for irrigation.

The lake occupies an area of 250 km<sup>2</sup>. In this large area, there are submerged historical patrimonies like the Mourão's Castle and rock engravings in Alandroal. There were also several animal species displaced for other areas in Portugal and Spain. The issue that caused more social impact was the relocation of a whole village called Aldeia da Luz that included 350 people. A new village was created with the same name. Since this change, people are deserting the village. The youngest people don't have space to construct new houses. People are complaining about the local economy is stagnated. The local agriculture suffered adjustment and demands a type of intensive agriculture and different types of agricultural products so that it is profitable. Taking in account that Spain, our upstream neighbours introduce 40.000 tons of nitrites, phosphates and minerals in the river and this water will be used for agriculture there is the

- There are two ethical problems to consider in the construction of the Alqueva:
  - On one hand, the construction benefits of the advantage of producing clean energy and give access to a more efficient system of agricultural irrigation,
  - But, it creates a huge impact on local population in social terms and destroys (partially) the flora and fauna environment and the landscape.