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CAN THE COMEST AND UNESCO'S "WATER AND ETHICS" INITIATIVE SERVE AS AN ETHICAL GUIDE AND COMMON YARDSTICK FOR DIFFERENT RELIGEOUS DENOMINATIONS?

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1. INTRODUCTION (I)

- This presentation tries to be mainly a catalyst for dialogue.
- I will try to be as much down to earth as possible.
- There is perhaps too many declarations. People may be fed up of them.

1. INTRODUCTION (II)

- Good Water Governance requires an equilibrium between the utilitarian aspects and the intangible (religious, cultural) aspects.
- Some religious leaders may think (wrongly) that all scientists are againts religious values.
- For some scientists experimental knowledge is the only way to know. This was rejected in the 2006 IAP Statement on the Teaching of Evolution.

2. SHORT REMINDER OF THE COMEST AND UNESCO “WATER AND ETHICS ACTIVITIES” (I)

- COMEST was created by UNESCO in 1998.
- UNESCO appointed in 1998 a working gropup (WG) on the ethics of freshwater uses.
- The WG produced an overview of the situation (published in 2000) and also completed and a dozen of draft Monographs.

2. SHORT REMINDER OF THE COMEST AND UNESCO “WATER AND ETHICS ACTIVITIES” (II)

- The conclusions of the WG were accepted by COMEST in 2000 and published in 2001 by the Chair of the COMEST Section on Water.
- In 2001 the COMEST also approved the RENEW Program to foster Water Ethics.

2. SHORT REMINDER OF THE COMEST AND UNESCO “WATER AND ETHICS ACTIVITIES” (III)

- In 2002 UNESCO WATER SCIENCE DIVISION continued the topic.
- The previous draft chapters were presented in a CD-Rom in the 2003 World Water Forum. In 2004 and published them in the UNESCO WATER AND ETHICS SERIES.
- In 2007 an Spanish Foundation organized a Workshop on Water Ethics, with the advice of UNESCO U.N. UNIVERSITY and TRANSPARENCY INTERNATIONAL.

3. MAIN GLOBAL WATER ISSUES (I)

Three main global water issues can be considered

3.1. The MDG of supply drinking water to about 50% one billion and sanitation to 50% of two billion humans by 2015.

- 50L/person/day is the goal.It means about 18 km^3/year. This volume is globally irrelevant.
- The funds necessary to solve these supply problems is estimated between 10 and 30 US$ billions per year. Including sanitation my be 100 US$ billion.
- This is less than the money spent in pet food by the billion of humans living in the EU, USA and Japan.

3. MAIN GLOBAL WATER ISSUES (II)

3.2. The MDG about malnourishment

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- About 800 million humans are not sufficiently fed.

- The global production of food is more than enough to feed those hungry people.

- The problem is mainly political, as recognised by many authors.

3. MAIN GLOBAL WATER ISSUES (III)

3.3. The impact of water development on the ecosystems: “save the planet”

- This is the most important issue from the ecological point of view.
- Main causes are waste waters of cities and industries, but mainly the water use for irrigation.
- Water use for irrigation is about 3000-4000 km^3/year (more than 200 times the water needed to solve the MDG.

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (I)

- Making aware of these facts to religeous leaders may be an relevant contribution of COMEST-UNESCO.
- I will only mention five activities, which are easyly available and cheap.
- There are others promising advances like Biotechnology or Solar energy, but have problems not solved yet.

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (II)

4.1. Virtual water, hydrological footprint and food security (1)

Virtual water is the amount of water necessary to produce a good or a service.

1 kgr wheat ……. 1.000 kgr water

1 kgr beef ……. 20.000 kgr water

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (III)

4.1. Virtual water, hydrological footprint and food security (2)

Hydrological footprint is the amount of water (blue and green) that a humans require for all their needs (about 90% for food).

vegetarian diet	~ 800 m^3/year
read meat diet	~ 1.500 m^3/year

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (IV)

4.1. Virtual water, hydrological footprint and food security (3)

Total Water resources 110.000 km^3/year
Green Water 70.000 km^3/year
Blue Water 40.000 km^3/year

Human needs

diet	population	km^3/year (blue + green)
Vegetarian	$7.000.10^6$	~ 6.000
Readmeat	$7.000.10^6$	~12.000
Vegetarian	$10.000.10^6$	~ 8.000
Readmeat	$10.000.10^6$	~15.000

betwen 5-13% of Total Water Resources

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (VI)

4.2. Desalination (1)

- The most common technology today is **REVERSE OSMOSIS (RO)**
- The energy to desalinize one cubic meter of sea water has decreased from almost 20 kwh/m^3 to less than 4 kwh/m^3.

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (VII)

4.2. Desalination (2)

- The cost of sea water desalination by RO is about US $ 0.5/m^3.
- This cost is affordable in most cases for urban water supply in cities near the coast.
- Currently in Spain about 7% of the urban population uses (desalinated) sea water.

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (VIII)

4.3. The Intensive GW use "Silent Revolution" (1)

- It has been carried out by millions of modest individual farmers.
- Water decision makers have seldom paid attention to this phenomenon.
- It has produced great socio-economic benefits, as well as some problems (mainly environmental).

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (IX)

4.3. The Intensive GW use "Silent Revolution" (2)

The Causes

- Wide availability of cheap well drilling technologies.
- Invention and commercialization of the submersible pump.
- Hydrogeology has become a solid body of science.

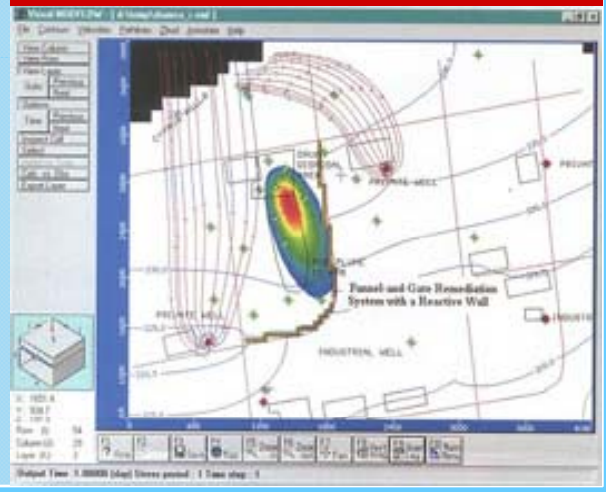
HOWEVER, THE SILENT REVOLUTION IS MAINLY MARKET DRIVEN, EXCEPT IN POOR COUNTRIES

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (X)

From the dug-well
to the deep borehole.

From the water wheel
to the pump.

From the water-witches
to Hydrogeology.



4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (XI)

4.3. The Intensive GW use "Silent Revolution" (3)

- Some negative effects may appear mainly
  - Groundwater quality degradation is usually the most important. It also may be due to poor land-use planning
  - Ecological impacts on surface water courses and wetlands (irrelevant wherever poverty is the main ecological problem).

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (XII)

4.3. The Intensive GW use "Silent Revolution" (4)

Frequent "hydromyths"

- Paraphrasing Hamlet:

  "FRAILTY, FRAILTY, THY NAME IS GROUNDWATER"

- "EVERY WATER WELL BECOMES DRY OR BRACKISH"

- Groundwater development is a "PILLAR OF SAND", prone to collapse.

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (XIII)

4.4. RELEVANCE OF REMOTE SENSING AND GIS INTERNET (1)

- A frequent problem in most hydrological conflicts is the illusory accurancy of data. Half-truths are worse than open lies.
- Generally, transparency and availability on these data is scarce.

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (XIV)

4.4. RELEVANCE OF REMOTE SENSING AND GIS INTERNET (2)

- The most frequent lack of data are:

  a) Irrigated surfaces and the types crops.

  b) The inventory of groundwater uses and rights.

- Remote sensing can usually provide these data in a fast and cheap way.

4. THE CONTRIBUTION OF THE ADVANCES OF SCIENCE AND TECHNOLOGY TO SOLVE WATER PROBLEMS (XV)

4.4. RELEVANCE OF REMOTE SENSING AND GIS INTERNET (3)

- Water management requires strong stakeholders participation.
- To achieve this participation transparency from government and education of the stakeholders are crucial.
- GIS system and internet may facilitate education and participation.

5. HOW CAN COMEST-UNESCO WATER AND ETHICS WORK WITH THE LEADERS OF DIFFERENT RELIGIOUS DENOMINATIONS? (I)

- There is not a blue print. Each region my be different.
- Ethical communalities seem to exist in water ethics.
- The experience of the Working Group for COMEST (1998-1999) and of the Santander (2007) Workshop allow an optimist outlook

5. HOW CAN COMEST-UNESCO WATER AND ETHICS WORK WITH THE LEADERS OF DIFFERENT RELIGIOUS DENOMINATIONS? (II)

These ethical communalities may be based mainly in the the three following principles:

- Dignity of every human being.
- Subsidiarity, that requires responsible participation in water governance.
- Solidarity that coordinates personal freedom with the respect to the common good.

5. HOW CAN COMEST-UNESCO WATER AND ETHICS WORK WITH THE LEADERS OF DIFFERENT RELIGIOUS DENOMINATIONS? (III)

- These principles are less compatible with a non-religious or a materialistic-hedonistic philosophy.

- Groucho Marx: *“I dont care for the future generations, what have they done for me?”*

6. CONCLUSIONS

- COMEST-UNESCO “Water-Ethics” initiatives are in good agreement with the basic moral tenets of most religeous denominations.
- We should bridge possible gaps of lack of understanding or information between some scientists and some religious leaders.
- This also may require an equilibrium between a extreme rational approach and an extra-emotional approach.

THANKS FOR YOUR ATTENTION