BOTÍN FOUNDATION WATER OBSERVATORY

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THE PROS AND CONS OF THE WATER FOOTPRINT AS A TOOL FOR INTEGRATED WATER RESOURCES MANAGEMENT

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by

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1. WHAT DOES IWRM MEAN?

- **Water is a poliedric resource with many facets.**
- **IWRM tries to consider simultaneously all the facets.**
- **This is an impossible endeavor: It is a kind of nirvana a desideratum never totally achieved.**

2. THE NUTSHELL OF THE COMEST DECLARATION ON WATER ETHICS

- **The UNESCO WORLD COUNCIL FOR THE ETHICS OF SCIENCE AND TECHNOLOGY appointed in 1998 a working group on the ethics of freshwater uses.**
- **The report of this group (see Llamas and Delli Priscoli, 2000) was adopted later by the COMEST in 2001.**
- **In a nutshell states that good water management requires equilibrium between its utilitarian values (irrigation, energy, and others) and its "intangible" values (cultural, religious, environmental, and others).**

3. THE PROS OF THE CLASSICAL WATER FOOTPRINT(WF) (I)

- **The concept of WF (Hoekstra, 2000s) is based in previous concepts of blue and green water (Falkenmark, 1990s) and virtual water (Allan. 1990s).**

- **It provides a numerical value of the virtual water used or traded by individuals, collective groups or products.**

- **Usually in the form of m^3/person and year, or m^3/Ton**

3. THE PROS OF THE CLASSICAL WATER FOOTPRINT(WF) (II)

- **It requires calculations relatively simple (but not very accurate).**
- **It provides a simple and transparent framework on the uses of water (blue, green, and gray).**
- **In opinion of many authors the gray water concept is controversial and requires more discussion**

3. THE PROS OF THE CLASSICAL WATER FOOTPRINT(WF) (III)

- **It shows generally that agricultural consumptive uses have always the lion's share (up to 90%).**

- **It allows following the temporal evolution of the food (virtual water) trade. The changes have been relevant in the last decades.**

- **The products WF provides a tool to promote eco-labeling in the business world (World Business Council for Sustainable Development) . This may enhance social awareness on water.**

- Copia de dos diapositivas de garrido et al que faltan. Se refieren a los cambios temporales en la WF. Se las voy a pedir a AG pues no tengo la versión electrónica del libro de Springer. Además interesa que sean en color.Quizás podríanser la 5.4 o la 5.9 o la 5.21

- Idem que la anterior. Se la voy a pedir a Garrido

4. THE CONS OF THE CLASSICAL WATER FOOTPRINT (I)

- **The simplification in the calculations for large regions may induce a cascade or errors in the final numbers.**

- **This means that the global water savings through the virtual water trade assumed frequently by some authors may become not only meaningless but also misleading.**

4. THE CONS OF THE CLASSICAL WATER FOOTPRINT (II)

- **The idea of water self sufficiency promoted by some authors today in the XXI century is unrealistic.**

- **The frequent consideration that the virtual water exported should not be included in the WF of a region or country is misleading.**

- **It ignores the economic and social interests of the people living in the country.**

4. THE CONS OF THE CLASSICAL WATER FOOTPRINT (III)

- **The relevance of future improvements in the agricultural technology in the crop yields in developing countries generally is not sufficiently considered.**
- **The WF exaggerates the role of water as a driver of the food trade and often forgets other comparative advantages factors for the food trade, mainly opportunity costs of the different water uses, or land availability or climate suitability.**
- **The eco-labeling of products may give origin to blackmailing to corporation by certain NGOs.**

5. THE "EXTENDED" WATER FOOTPRINT: PROS (I)

- In the analyses done by the FB-WATER OBSERVATORY in Spain we include the economic value related to each of the consumptive water uses.
- We obtain the added value in €/m^3 for each use.
- We distinguish blue and green water.
- We do not include yet in quantitative way the gray water.

5. THE "EXTENDED" WATER FOOTPRINT: PROS (II)

- **In agriculture we distinguished different crops and different technologies.**
- **When possible we separate surface and groundwater in blue water irrigation.**
- **The differences in the added economic value can be from one to one hundred; e.g. from cereals to horticulture in greenhouses.**
- **This has shown that in Spain with less than 20% of the total blue water used for irrigation the economic value obtained is almost 80% of the total value(see Aldaya et al. 2008; Llamas et al., 2009).**

5. THE “EXTENDED” WATER FOOTPRINT: PROS (III)

- **In Spain It has been shown that in the last decade the livestock economic value has increased dramatically. Today is higher than the value of all the conventional crops.**

- **This activity has been possible by importing fodder (virtual water) from other countries.**

- **See…..**

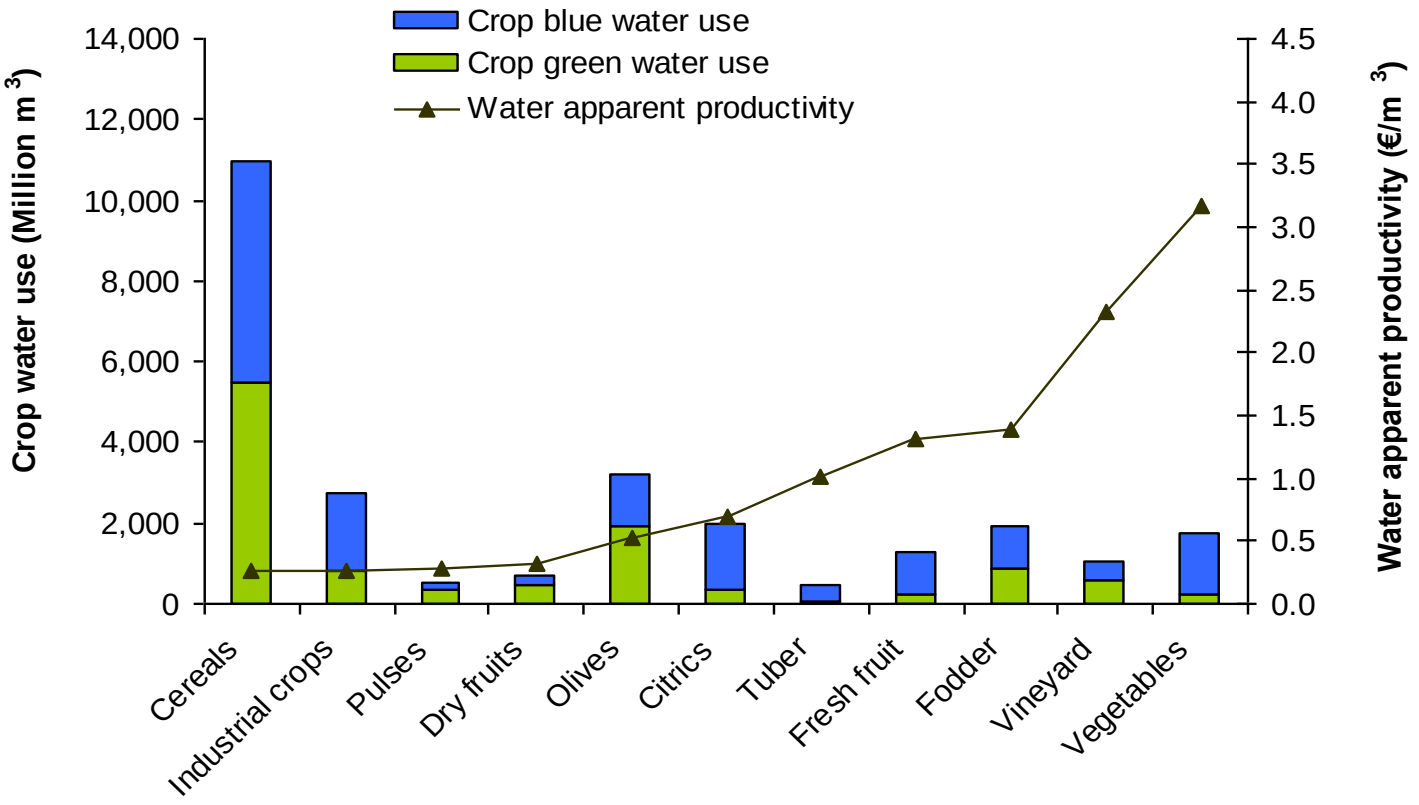
5. THE "EXTENDED" WATER FOOTPRINT: CONS (I)

- **Usually the potential adverse effects, mainly environmental, caused for the exportation of food (virtual water) in the exporting country are not considered.**

- **Most times the role of the recent advances in science and technology are not considered; mainly the membrane technology (desalination) and the groundwater development silent revolution (see: Llamas & Martinez Santos, 2005; López-Gunn and Llamas, 2008).**

4. FOUR SIGNIFICANT ADVANCES FOR WATER AND FOOD SECURITY (XI)
B) VIRTUAL WATER TRADE (5)

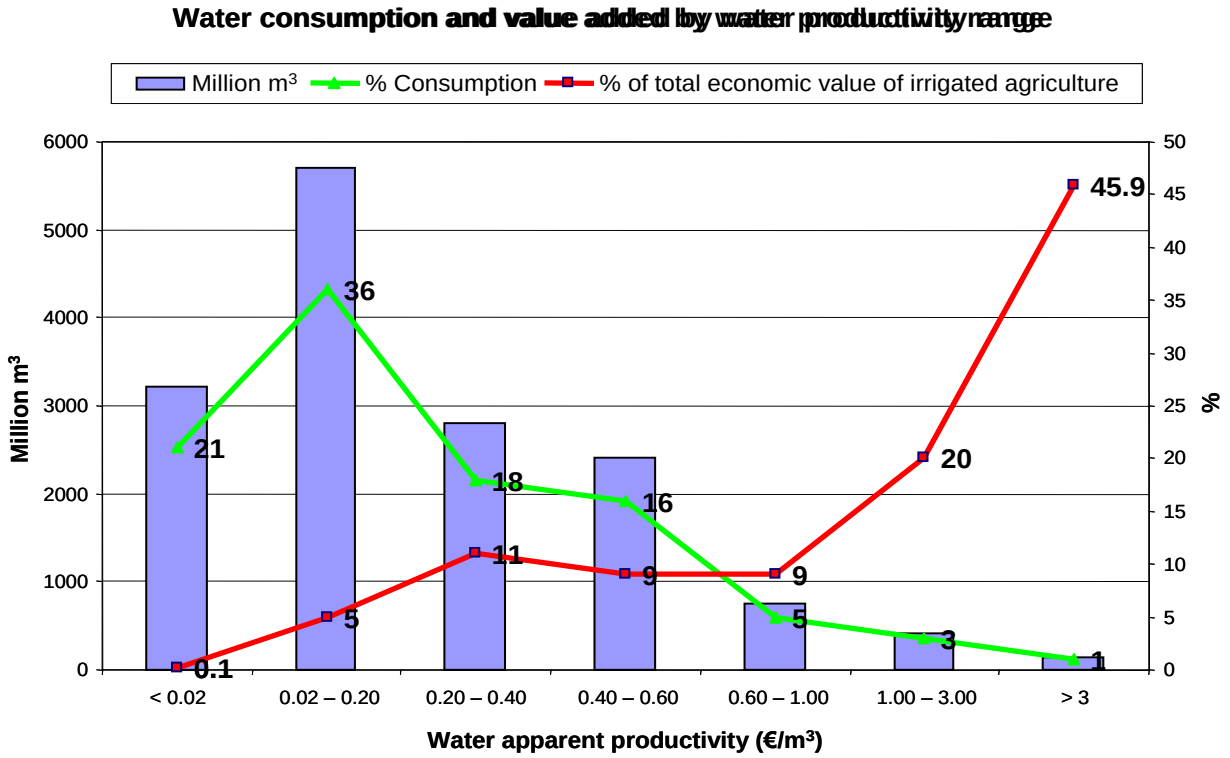
WATER APPARENT PRODUCTIVITY AND BLUE AND GREEN WATER FOOTPRINT OF CROP PRODUCTION IN SPANISH AGRICULTURE (AVERAGE YEAR) (AFTER GARRIDO, ET AL., 2010).



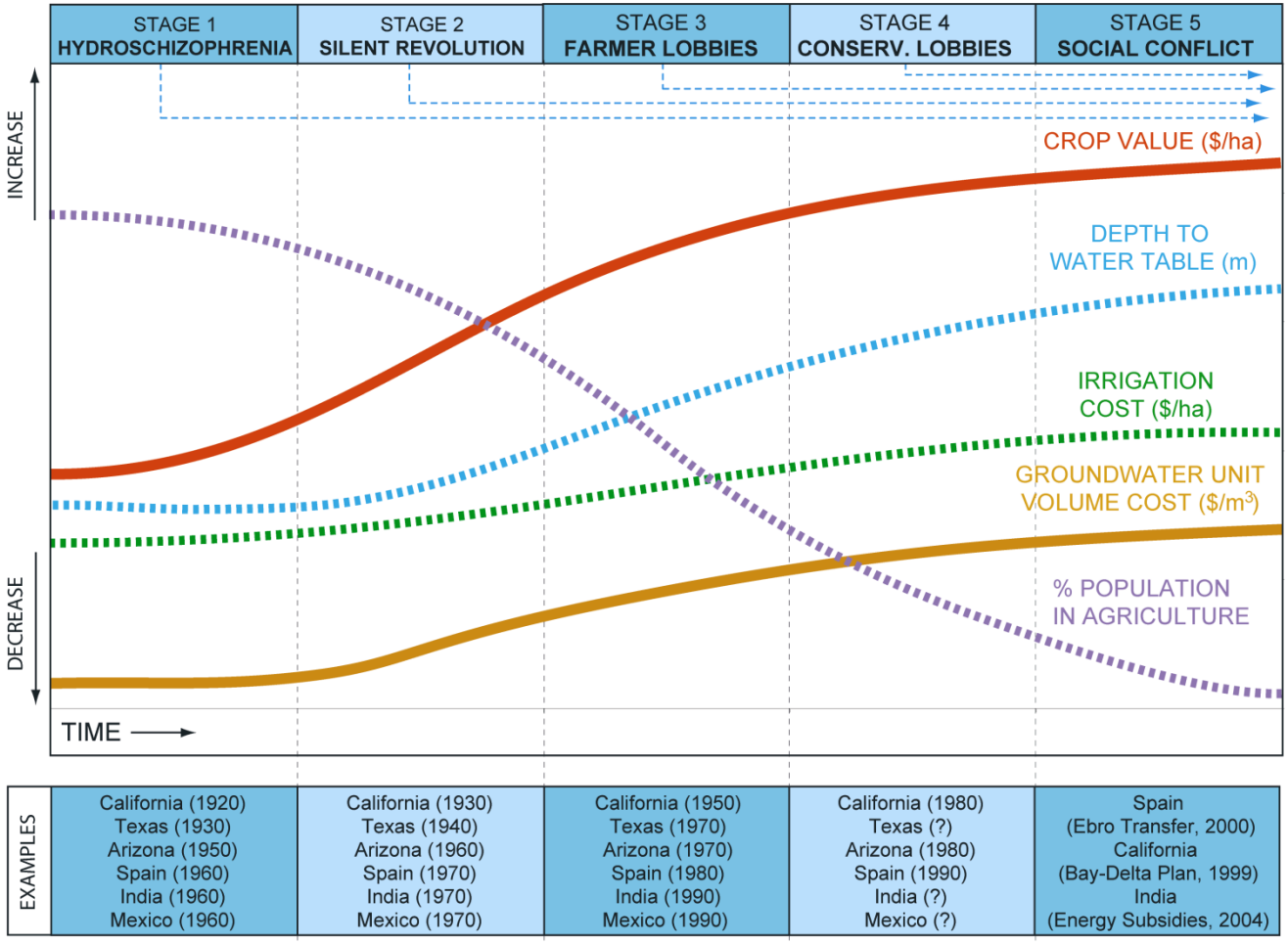
4. FOUR SIGNIFICANT ADVANCES FOR WATER AND FOOD SECURITY (XII)
B) VIRTUAL WATER TRADE (6)

IRRIGATED AGRICULTURE IN SPAIN

BLUE WATER CONSUMPTION (10^6 M^3), % OF BLUE WATER CONSUMPTION, AND % OF TOTAL ECONOMIC VALUE OF IRRIGATED AGRICULTURE VERSUS WATER APPARENT PRODUCTIVITY (€/ M^3) (AFTER ALDAYA ET AL., 2008).



ROUGH (GROUND)WATER POLICY TRENDS IN ARID AND SEMI-ARID COUNTRIES



7. OTHER RELEVANT DRIVERS IN THE IWRM (I)

- **As previously mentioned the good governance of water depends on many factors or drivers.**

- **Some of them are utilitarian values as those described but there exist also "intangible" values that may play an relevant role.**

- **Among them are the environmental, social political and cultural issues (See Llamas & al. 2008).**

7. OTHER RELEVANT DRIVERS IN THE IWRM (II)

- **Usually water resources have become a political weapon in almost every arid or semiarid country.**

- **Spain is a typical case.**

- **For instance the strong debate about the Ebro river water transfer to the Mediterranean coast have changed the vote in Aragón and Catalunia (in favor of the socialists) and in Valencia and Murcia (in favor of the popular party).**

8. CONCLUSIONS (I)

- **The classical water footprint is not a good tool to achieve an IWRM because it usually ignores some relevant factors in the water policy. It may be not only meaningless but also misleading.**

8. CONCLUSIONS (II)

- **The "extended" water footprint tool may become a useful but not complete tool to achieve an IWRM.**

- **It is easy to apply and transparent, but has also to consider other "intangible" factors (political, cultural, environmental, and others) that may be so important as those economical.**

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