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WATER: A TRIGGER FOR INNOVATIVE PARTNERSHIPS

Abstract: Water plays a crucial and unique role in our society. It has been a policy issue since the early stages of human civilization but this was a time for conquest and control. In response to environmental concerns, the European water policy has developed since the years 70s and has resulted into a comprehensive legislative framework. In 2012, the European Commission carried out an in-depth assessment of the EU water policy. It concluded that the objective of restoring the ecological quality of all water bodies will be not met as soon as foreseen but also showed no need to revise the EU legislative package even if implementation difficulties were initially underestimated and climate change adaption will add pressure. In order to fully enforce this legislation and make it delivering on the field, the water stakeholders must be fully engaged into the river basin management. This calls for the creation of new partnerships that work across socio-economic borders and traditional lines of responsibility. To get these partnerships working, it is necessary to question the economic valuation processes of water resources given that water is a collective patrimony that cannot be traded but needs to be properly maintained. .

Key words: water, river basin management , EU directives, implementation, partnership

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Water is the basis of our nature. Given its physical properties, it plays a unique role for energy transfer and exchange regulation within all ecosystems. There is no substitute to water. For these reasons, water is often viewed as the bloodstream of the biosphere. Fortunately, water is generally abundant across the global but unevenly distributed in every region. Because it is heavy, water is seldom transported over long distances unless one can take advantage of gravitational flow. As a consequence, water is managed at local level depending on geographical circumstances and available infrastructure. Unlike energy, it is not a commodity that can be traded on the worldwide markets.

Since the early stages of civilization, a lot of attention has been paid to water. It was not only a matter of accessing to water resources but also to ensure safety against flood risks and to promote economic development via inland navigation or the supply of hydropower. At time, water management was in the domain of engineering and the goal was to conquest and control Nature for the benefit of mankind. The resource it-self was taken for granted.

In the years seventies, environmental concerns started to emerge[1]. At EU level, freshwater, together with waste, was one of the first environmental sectors to be regulated. It occurred not only for the sake of environmental protection but also to avoid market distortions caused by environmental dumping. Therefore, a series of qualitative norms were adopted in order to protect water resources (drinking water, bathing, fish life) and control the discharge of dangerous substances into the aquatic environment. In a second step, the European policy-makers regulated the impact of some key sectors (urban waste water, agricultural fertilizers and industry) by fixing emission norms and precise requirements in term of infrastructure and equipments.

[1] UN Conference on the Human Environment in Stockholm in 1972

In the years nineties, it became clear that those measures were insufficient to stop the degradation of water ecosystems. Policy-makers went to acknowledge that priority should be given to the conservation of aquatic ecosystems and that the river basin was the most appropriate management unit to coordinate the different water uses even if it does not fit into the administrative borders. After 12-year negotiation, the European Union adopted in 2000 the Water Framework Directive[2] (WFD) that has brought in several innovations:

- Objective driven legislation (good ecological status to be reached in all European water bodies by 2015 at the end of the 1st planning cycle)
- Ecological quality as the ultimate indicator of anthropogenic impacts
- River basin management planning based on 6-year cycle (see annex 1) that covers all types of water bodies (river, lakes, groundwater, coastal and brackish water). It also provides for transboundary cooperation[3] between Member States.
- Economic instruments to support decision-making and to influence polluters' behavior.
- Environmental quality objectives for hazardous substances
- Comprehensive monitoring system
- Enhanced reporting provisions
- Public participation

A lot of preparatory work proved to be necessary to pave the way for the implementation of this Directive. Therefore the Member States decided in 2001 to join forces and to appoint expert groups to develop guidance for river basin authorities. It was soon realized that some difficulties had been underestimated at the time of WFD adoption. Here are 3 examples

- Reaching the good ecological status presumes that the river morphology would be restored to a pristine state. Since the early days, a lot of human developments have taken place on the river banks. It would be unrealistic to remove them because of disproportionate costs in comparison with environmental benefits. Exemptions can be granted but the obligation remains to rehabilitate the river bed to its best ecological potential. In addition, further modifications of river morphology may be requested for the sakes of flood protection, hydropower or inland navigation. Conflicts of interests are likely to occur between environmental sectors. The directive states that these should be ruled out on the basis of the cost / benefit ratio but enforcing this concept is not far from being univocal depending on the boundaries of the assessment and the valuation methodologies.
- While significant achievements have been obtained to control point sources[4] of chemical pollution, it has been increasingly realized that diffuse sources of pollution and micro-pollutants[5] make it extremely difficult to reach the good ecological status in many cases. Tackling those emissions can hardly be addressed via the WFD because it deals with the way those substances are put on the market and used on the field. Measures must then be adopted via other legal instruments (i.e. the so-called REACH

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2 Directive 2000/60/EC establishing a framework for the Community action in the field of water policy

3 *60%* of the EU surface area lies in river basins that cross at least one national border (see annex 2)

4 Point sources are well identified by the authorities and discharges are regulated by a permit (i.e. industry). Diffuse sources do not correspond to a precise point of discharge. They are related to a given practice (i.e. spreading pesticides).

5 Micro-pollutants are chemicals that are toxic, persistent and liable to bioaccumulation in the ecosystems.

regulation). In this context, water issues are often outweighed by other environmental or economic considerations.

- The WFD implementation forced the environmental administrations to modernize themselves. Huge efforts have been undertaken to reinforce their monitoring capacity and to develop the IT infrastructure (i.e. geographical information system, data exchange). However, the Directive left aside the needs to reinforce their competencies and to allocate additional budget resources.

Later, two WFD daughter directives were adopted to fix some technical issues with priority substances and groundwater while the legal framework has been extended in 2007 and 2008 to floods[6] and marine waters[7] through 2 directives whose planning provision are harmonized with the WFD. The 3 planning cycles will be implemented from 2015 onwards.

In 2009, the European Commission launched two non legislative initiatives to respond water issues that were not on the political agenda at the time the WFD was designed but that have strongly emerged since them:

- Water scarcity & droughts: In many regions across Europe, the quantity of abstracted water exceeds the natural recharge capacity of aquifers. This phenomenon is not the privilege of arid regions in Southern Europe but also occurs in densely populated regions in Northern Europe (i.e. South West England). It got unnoticed for a long time because of large quantities of water stored in this aquifers but, now, irreversible damages are happening (i.e. salt water intrusion in coastal areas where more than 40% of the world population lives). Therefore more attention needs to be paid to more efficient use of water resources (i.e. irrigation, leakages in distribution networks, etc) while investments should go to alternative water supply facilities (i.e. desalination, treated waste water reuse).
- Climate change adaptation: Climate change is an unquestionable reality. If even an agreement could be reached at world level in order to control the green house gases emissions, it would be still impossible to mitigate all the impacts. Therefore we have to adapt to this situation. Water is a central issue in this context as it is the main medium through which climate change impacts will propagate (drought, floods, storms, etc). The issue is very complex and full of uncertainties but it is sure that the water sectors will have to cope with more extreme events. The climate equilibrium has been broken and it will take a very long time to stabilize again. As pointed out in 2006 by the Stern Review on the Economics of Climate Change, proactive risks management is an absolute must to keep the situation under control.

In 2012, the European Commission launched the so-called "2012 blueprint to safeguard Europe waters", which was aimed at checking whether the EU water policy is well on track to meet its objectives. The Blueprint has scrutinized the content of the river basin management plans[8] that have entered into force in 2009. At the same time it has also revised the water scarcity & drought and climate change adaptation initiatives. As a result, the European Commission concluded that valuable efforts were made by Member States to

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6 Directive 2007/60/EC on the assessment and management of flood risks

7 Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy

8 In March 2013, river basin management plans were not adopted in 4 Member States.

implement the WFD even if WFD goals will not be reached at the end of the 1st planning cycle[9]. In the context of preparing the 2nd planning cycle that will enter into force in 2015, water manager will benefit from the following developments:

- Technological progress: water technologies are already very advanced[10] but significant progress still happening with water treatment technologies (nanofiltration, membrane chemistry, desalination) that will alleviate the pressures on the ecosystems. At the same time, the development of new sensors and ICT are leading to build smart water supply and treatment systems that will help to improve the efficiency of water uses.
- Water economics: A new generation of management tools[11] is being developed. They will be supported by water accounting systems, which are now being developed at basin level in line with the UN guidelines.
- Ecological restoration: More scientific knowledge is need to understand the different impact mechanisms of water uses on ecosystem, to assess the mitigation options and, if possible, to restore the ecosystems to a functional state.

As conclusion, the time of truth has arrived for the EU water policy. On one hand valuable knowledge has been gained all across Europe with the implementation of WFD tools. Experience shows no reason to amend the WFD fundamentals. On the other hand, worries about the chances to avoid a severe water crisis in the future are well grounded as demographic growth and economic development will continue to add pressures on ecosystems while climate change is likely to make them more vulnerable.

If water managers have a fair idea of what needs to be achieved and recognize the necessity to take quick actions, they remain unable to fully enforce the water legislation and make it delivering on the field. To this end, they need to get all the water stakeholders involved in the water resources governance and to obtain commitments. This is not an easy task as water issues are highly traversal and connects many sectors (see annex 4), which do not always consider water as an issue. In addition, water managers have worked for a long time in a convenient isolation according to a predictable environment. From being a controller, they must to become facilitator and to take the leadership on the implementation of river basin management plans. Water services were also viewed as a business for engineers and infrastructure planners. The facts that the infrastructure assets are mostly underground and that the water services have been delivered at a very cheap price did not help to raise the public awareness. There is a strong need to work across the socio-economic boundaries and traditional lines of responsibilities in order to agree on a unified vision and to resolve possible contradictions[12].

This situation calls for innovative partnerships. In this context, innovation means that these partnerships will not be built on precarious comprises but on real synergies between all water resources users. It goes well beyond the existing debates on public-private partnerships that tend to be very emotional or dogmatic. Every possible effort should be made to better coordinate with other environmental sectors (soil, biodiversity, etc.) and the production of renewable energies (i.e. sewage sludge recovery). The vision must

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9 Only 53% of the EU water bodies are likely to meet the good ecological status in 2015. This is 10 % more than in 2009.

10 See for instance the water recycling system developed by ESA and NASA for spatial exploration

11 For instance, the payment for ecosystem services at basin level or the virtual water transfer at world level.

12 For instance affordable water services for everyone ⇔ additional funding to upgrade the infrastructure

encompass several time scales corresponding to the 6-year planning cycles, the very long life span of heavy infrastructures (sometimes over 100 years), and the time lag between pollution discharge and environmental impacts. Partnerships' configuration must remain flexible enough in order to adapt to variety of local contexts and to survive changes of circumstances (droughts, floods, accidental pollution, etc). The need has been acknowledged by the EU institutions which have set up the European Innovation partnership on water as a matter of following up with the 2012 blueprint.

However, partnership will not work without questioning the economic valuation processes of water resources. This is very important as pricing is not achieved via market mechanism. In his book "the wealth of Nations" (1776), Adam Smith stated that that capital, labor and raw materials are the pillars of economic growth. With capital and labor, we have learned a lot since then but with raw materials, it is only now that we are experimenting that these are available in finite quantities on the earth. Recycling has become an obvious necessity but water is a bit different in this respect as it is not consumed like oil for instance. The overall quantity on the planet will not change. Water is a common patrimony without ownership but it must be maintained properly. The issue is how to ensure that sufficient resources are allocated for this purpose.

The first option is to charge the water users for the access to this patrimony and to recover the full costs for its maintenance. According to the WFD, pricing mechanisms should also incorporate environmental[13] and resources[14] costs in addition to the investment and exploitation costs related to the infrastructure. This is clearly an adaptation strategy. One can wonder whether a fundamental reform of the current economic system is needed in order to reconnect rational self-interest to collective self-preservation. The role of competition in this context needs special attention. On the first hand, it clearly boosts the efficiency of resources use but on the other hand, it narrowly focuses on a restricted set of parameters applicable to the whole market. All what does not fit in, is treated as waste.

As a conclusion, the solution to water crisis does not lay within the water sector, It has to come from outside. Whatever the future might be, it is all our choices and our acceptance of the choices to be engaged.

[13] Environmental damages costs for which the polluter-pays principle should be applied

[14] Opportunity costs linked to other uses that might be preempted

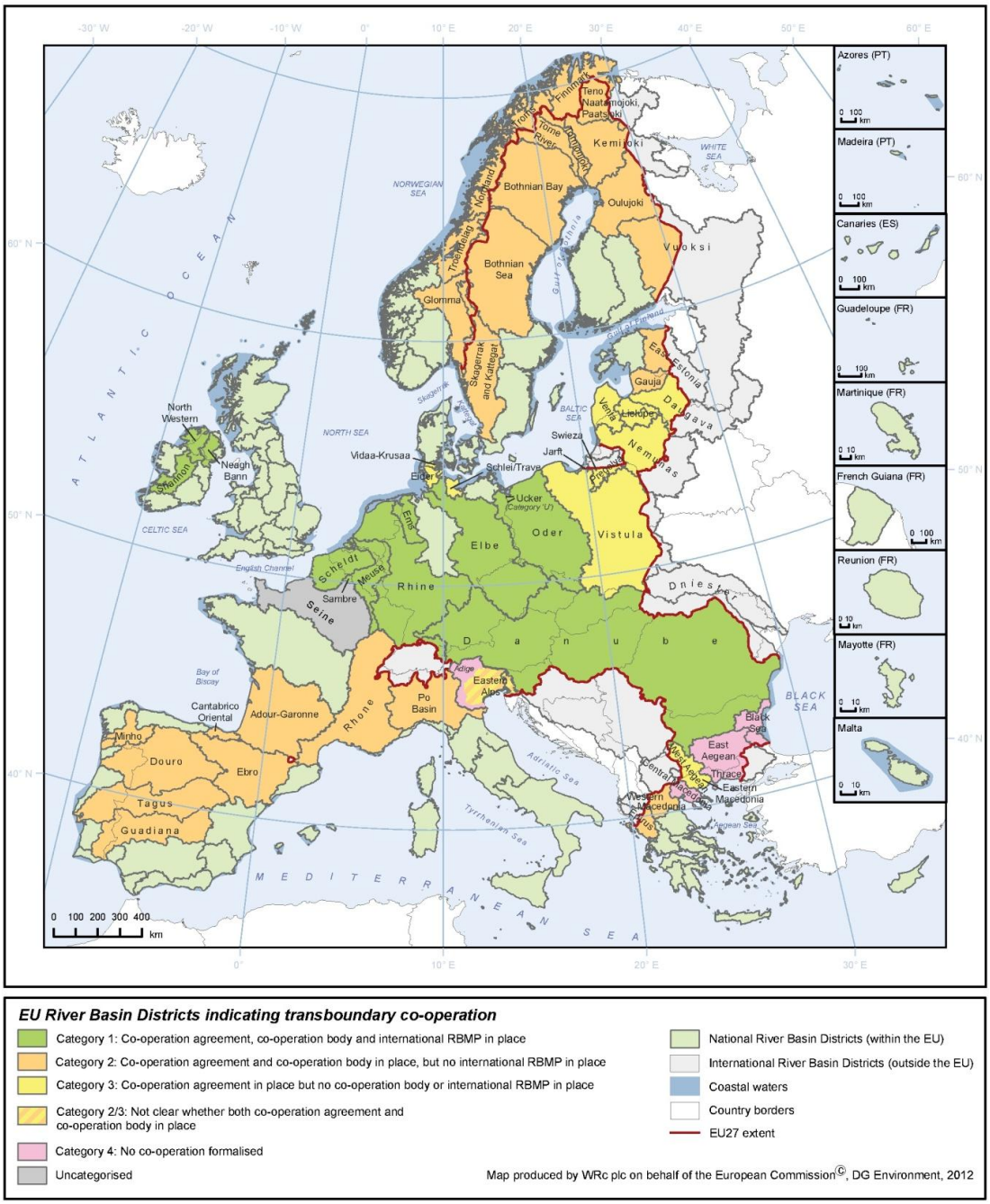
ANNEX 1- WFD PLANNING CYCLE

Year -3	Risks analysis
Year -1	Draft management plan
Year 0	Plans to be finalized after public consultation
Year +3	Measures to be made fully operational
Year 6	End of planning cycle /evaluation

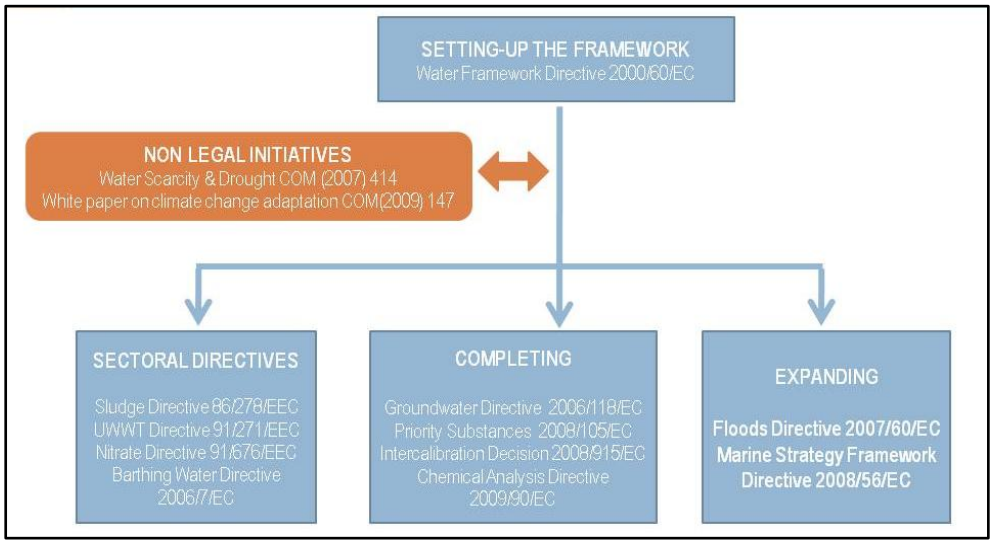
+ Continuous monitoring

From 2015 onwards, WFD planning cycle will be coupled with Floods directive and Marine Strategy

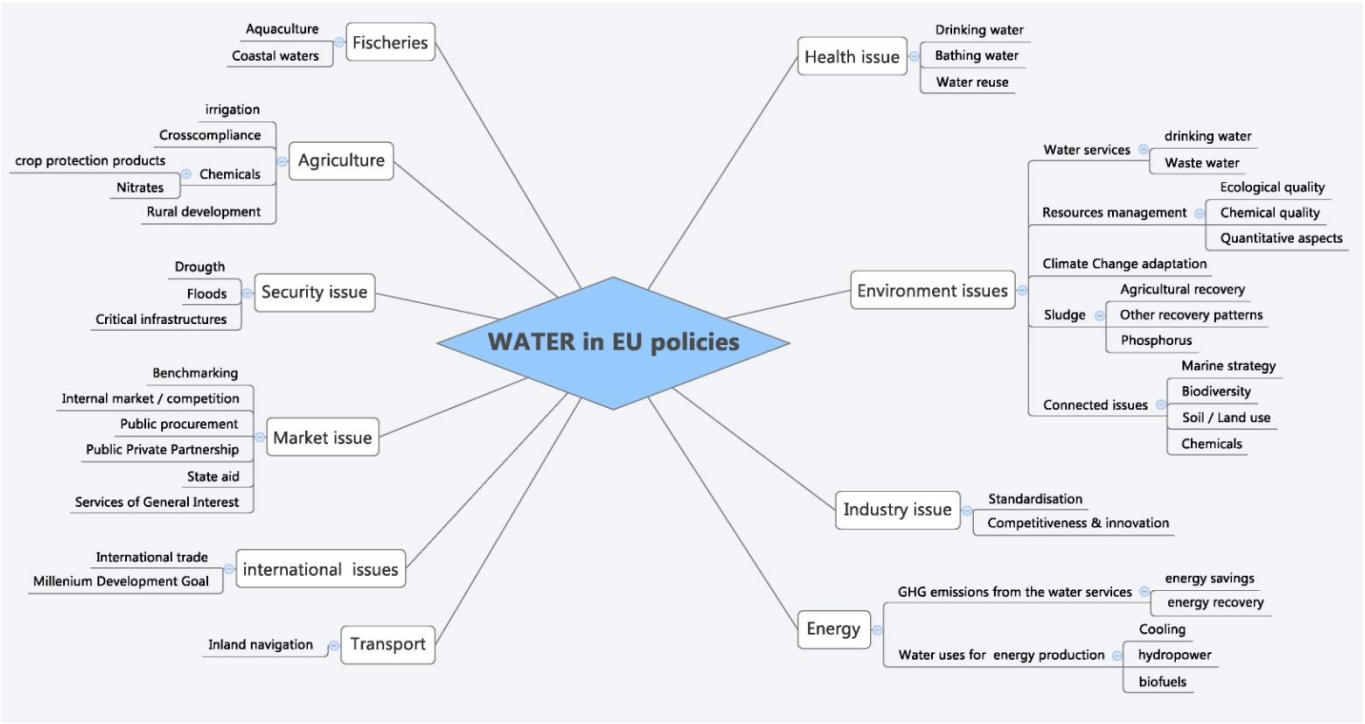
ANNEX 2 - MAP OF EU RIVER BASINS



ANNEX 3 -EU WATER LEGAL FRAMEWORK



ANNEX 4 – WATER IN EU POLICIES



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