



Review of draft Indian water legislation and comparison with the European Water Framework Directive

November 2015

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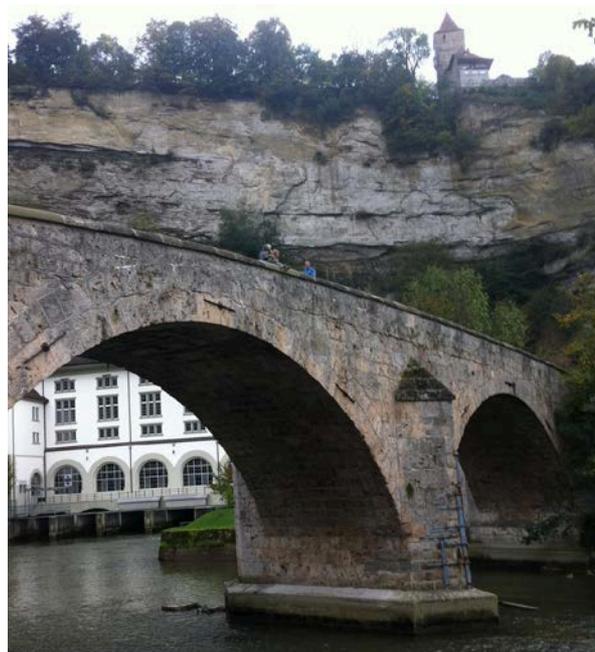
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REPORT

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Executive Summary

1. Water situation in India and current legislative framework

India may be considered a water-rich country, as the long-term average rainfall for the country is the highest in the world for a country of comparable size. However, a widening gap between water demand and supply is occurring and may lead the country far below a “water scarcity condition” in 2050. The situation of groundwater is extremely worrying as more and more areas are facing severe groundwater depletion like in Punjab.

Water pollution, which contributes to a reduction in water availability, is also the cause of acute health problems and impairs human development in India. Finally, pollution and water stress affects life of ecosystems, wetlands and biodiversity resources, while these natural resources remain vital for many local communities’ livelihood.

The country faces thus multiple and interconnected challenges related to water, notably multi-scale water conflicts. However, in response to this water crisis, the current legislative water framework in India remains insufficient, complex and multilayered. State initiatives like the emergence of State Water Policies inspired by the National Water Policy are good signals. Still, a national water legislative framework is required to ensure countrywide implementation of common governing principles and to ensure key provisions are made justiciable.

2. Main results of the comparison between the European Water Framework Directive and the draft Indian Water Framework Law

1. Although both texts aim at protecting water resources, the underlying political approaches are different. The European Water Framework Directive is technical and science-oriented, with a great concern for achieving results. The draft Indian Water Framework Law is more policy and social matters-oriented, with a concern for establishing common governing principles for all states and a Right to Water throughout the country. The questioned legitimacy of a water framework legislation drafted by the Central level in the Indian context versus the clear mandate of the European Union in the environmental domain have surely influenced the directions taken by both texts.

2. As a consequence, the strength of the European Water Framework Directive (WFD) as a legally binding instrument is significantly higher than the draft Indian Water Framework Law. For example, most of the European WFD provisions are results-oriented, with firm deadlines and penalties in the case of non-compliance.

3. Not surprisingly with regard to the aforementioned divergence, few definitions converge between the two texts. Only 2 out of 30 (India) and 41 (European Union) definitions are the same.

4. Some further governing principles do not exactly converge. Concerning water pricing, on which both text converge, the Indian text requires differential pricing for drinking and sanitation in the name of social justice while the European text insists rather on the adequate contribution of the different water uses to the recovery of costs of water services.

5. Integrated river basin approaches are even named differently. The Indian draft WFL requires River Basin Master Plans in order to achieve Integrated River Basin Development and Management while the European WFD requires River Basin Management Plans with no mention of water resources development. Apart from considerations on the content of those plans, which differ a lot (the WFD requirements are more fully developed), the implementation strategies diverge too: the WFD requires an exhaustive coverage of the European Union territory with such

River Basin Management Plans, with whatever authorities to take care of the plans drafting (to be designated by the member states, among existing institutions or not).

In contrast, the draft Indian WFL requires first the creation of a river basin organization, which will then get the responsibility of producing the River Basin Master plan. In this approach, the governance aspects are given precedence over the technical planning process. As a potential consequence, only “politically mature” river basins in India might be covered by River Basin Master Plan in short or medium terms.

6. On transboundary issues, both texts prescribe constructive collaboration between concerned states or member States in river basin plans. The European WFD even recommends single River Basin Management Plans for international river basin districts. The Indian text instead insists on institutional arrangements for water sharing and recommends negotiations, conciliation or mediation at the earliest stages, so as to avoid recourse to adjudication as far as possible.

3. Some recommendations stemming from the comparison

Recommendations at the text level:

Further clarity could be brought to some existing provisions of the draft text on the following issues:

- respective position, legal status and administrative responsibilities of the institutions or organizations set up or mentioned by the text (river basin/sub-basin organization, high-powered committees, appropriate agency for each river basin/sub-basin to collect and collate all data with regard to water).
- current institutions/authorities that could be the “appropriate government” to “specify the quality standards of water supply”, to “expand flood forecasting”, to “lay down principles for allocation of water resources” or to “demarcate groundwater recharge zones for water sharing”.
- respective interactions and coordination required in preparation of River Basin Master Plans and of Perspective Plan for sustainable development of water resources ensuring water security for the years 2025 and 2050 for each district, state and for the entire country.

Policy and technical recommendations:

In some areas where both entities face similar challenges, further collaboration could take place. The proposed issues are urban water management (drinking water supply, sanitation, soil sealing mitigation), flood management, water scarcity reduction (water efficiency technologies, natural water retention measures, green infrastructure) and integration of water and biodiversity measures.

On governance issues, discussions could be launched with central and state levels representatives on the design of results-oriented provisions. These provisions could be introduced in the draft Indian Water Framework Law, to be later integrated in future state Water Framework legislations.

Finally, some technical and methodological exchanges, as well as further scientific collaborations could also be launched on the following issues:

- drafting of River Basin plans, with the European experience of more than hundred RBMPs already drafted (how to deal with heterogeneous and insufficient data? how to integrate climate change scenario or demand-side management measures in future scenarios, etc.),
- use of biological indicators for water quality assessment, as they are cost-effective,
- country-wide water data collection, processing and publishing.

These recommendations will be further discussed with Indian and European stakeholders and administrative officers during the November 2015 meetings in Delhi.

Part 1: Water situation in India and current legislative framework

This part will briefly present the status of water resources and water-related ecosystems in India. It will then resume the key water challenges the country faces today. Finally, the current legislative framework will be sketched out.

1. WATER SITUATION IN INDIA: FACTS AND TRENDS

Globally a “water-rich country”, but facing locally more and more water scarcity

Due to its geographical situation, its vast size (about 3,3 million km² – versus about 4,5 million km² for the European Union countries) and its varied topography, India presents a large spectrum of water bodies and wetlands, under various climates (ranging from arid desert in the west, to alpine tundra and glaciers in the north, and tropical humid regions supporting rainforests in the southwest and the island territories).

India may be perceived a “water-rich” country, as the long-term average rainfall for the country (1 160 mm) is the highest in the world for country of comparable size¹. However, rainfall is extremely variable across the country, and throughout the year. As a consequence of the monsoon regime, 80% of the annual run-off of the rivers occurs in the monsoon months from June to September. Acute water shortage is faced in many parts of India, especially outside the monsoon period. Not only recurrent droughts but also floods are other consequences of this variability, with huge human and economic costs (about 5700 people died in the Uttarakhand June 2013 monsoon disaster).

Despite some academic debate on figures and methods of estimating the total usable water in India (estimations range from 654 to 1123 Billion Cubic Meters)¹ in contrast to the current use of 634 BCM, **there is a consensus that this “surplus scenario” will not last long.** Due to climate change impacts and an increased use of water by households, industry and mainly agriculture (the predominant water user, about 80%), a widening gap between water demand and supply is occurring. Demand in 2030 has been estimated to 754 BCM by Addams et al., 2009¹.

The average annual per capita water availability is likely to evolve from 1545 m³/year in 2011 to 1140 m³/year in 2050, close to the stated “water scarcity condition” limit of 1000 m³/year¹ (a per capita availability of less than 1700 m³ is termed as water-stressed condition). The *National Hydrology Institute, Rorkee* has an even stricter estimation at 687 m³/year in 2050, far below the water scarcity condition.

¹ UNICEF, FAO and SaciWATERS. 2013. Water in India: Situation and Prospects.

Nota: the European Union’s long-term average rainfall is about **950 mm**, with strong disparities, notably between southern and northern countries. The average annual per capita water availability in Europe should remain quite stable, as it is likely to evolve from about **4000 m³/year in 1995** to 3920 m³/year in 2025 (I. A. Shiklomanov, John C. Rodda, Cambridge University press, 2004).

To increase surface water resources availability, the government of India has created over the years a total storage capacity of 212 BCM through major and medium dam projects. Additional projects (about 100 BCM) remain under consideration. Groundwater resources are even of more importance for India. **The country is the largest user of groundwater in the world.** It uses an estimated 230 BCM per year. More than 60 per cent of irrigated agriculture and 85 per cent of drinking water supplies are dependent on groundwater. Nearly 90% of the rural water supply is from groundwater sources².

However, as groundwater can be exploited by the landowner as a private resource without any control, the growing water needs of irrigated agriculture, industry and households have led to an **overexploitation of groundwater resources**. India has over 20 million modern water extraction structures among the farmers compared with a few tens of thousands in the 60's³. Punjab is one of the states most concerned, with the water table declining up to 90 cm per year during the period 2000-2005 in some areas⁴.

Water quality issues: a growing threat for communities and ecosystems

Water quality is a key component of water and food security. Polluted waters can directly impact human development while meeting neither drinking purposes nor irrigation needs. In India, one of the main (measured) river pollutants is **microbial contamination, along with organic pollution, which affects human health** (drinking and bathing uses are impacted) and alluvial or related groundwater quality. The lack of sanitation in Indian cities is the main cause (less than 20% of total urban sewage is treated in India, with Delhi and Mumbai representing the largest share).

The country is also concerned by **salt intrusion** into water resources, in coastal regions as well as in regions like Rajasthan, Haryana, and Punjab, where inland salinity is also a major problem. **Fluoride and arsenic contamination** caused by geochemical processes (Himalaya-originated sediments) have also been registered in several northern States in India, especially in West-Bengal and represent an acute health concern.

Nitrates and pesticide contamination of waters, linked to agricultural practices, are also increasing but the monitoring network is not sufficiently developed to assess the exact extent of such pollution. Ground waters, as well as surface waters, are also largely threatened by unplanned disposal of industrial effluents, sewage and waste disposal sites leachate, with human health hazardous impacts. **Metal ions and other pollutant** emissions lead to river, lake and pond sediment contamination, with negative effects on human health, and on aquatic and wetlands ecosystems.

Central Ministry of Environment and Forests (MoEF) has conducted large inventories and **river ecosystems and wetlands status assessments**, mainly through *National River Conservation programmes* and the *National Wetland Conservation programme*. India has indeed a great natural

² World Bank, Deep Well and Prudence: Towards Pragmatic Action for Addressing Groundwater Overexploitation in India, 2010.

³ Shah, T., India's Groundwater Irrigation Economy: The Challenge of Balancing Livelihoods and Environment, 2009 cited by UNICEF, FAO and SaciWATERs, *Water in India: Situation and Prospects*, 2013.

⁴ Singh, K., Groundwater depletion in Punjab: measurement and countering strategies. *Ind. J. Agric. Econ.*, 2011, 66, 583–589.

heritage: in 1998, the total wetland area was estimated in the country at about 76,000 km² (compared with about 34,000 km² in the European union). However, studies show **losses and degradations due to anthropogenic pressures**, which in turn **affect local communities**, as these are largely dependant on such ecosystems for their livelihood. Such pressures are expected to grow in the future with population increase and further settlements (legal and illegal).

2. KEY WATER CHALLENGES IN INDIA

As a consequence of the water situation mentioned in the first paragraph, the country faces today simultaneous and acute challenges related to water. These challenges are listed here:

- Ensuring **safe drinking water and sanitation for all**, to improve human health and development,
- Ensuring **food security** with a **sustainable use of water**,
- Developing **energy access for all**, with limited impacts on water resources and ecosystems,
- Coping with increasing **water-related hazards and disasters** (flood, drought, landslide),
- Managing **competition for water** and **multi-scale water conflicts**, in the context of **climate change**,
- Protecting and **preserving ecosystems and biodiversity**, restoring high-impacted areas.

These challenges deal with **social, economic and political issues far beyond technical visions** and solutions. Still, **implementing and managing a water monitoring network** to accurately assess water resources quantity, quality and risks is a secondary but also an important challenge for India.

3. CURRENT LEGISLATIVE FRAMEWORK

The Water Act, 1974 and the Environment Protection Act, 1986: the two major legislative provisions related to water

According to the Indian Constitution, water is designated as a State subject and comes under the responsibility of the Central level only for the regulation of the development of inter-state rivers and for settlement of inter-state disputes over water. The *River Boards Act, 1956* and the *Interstate Water Disputes Act, 1956* were established under these provisions.

Although a **number of legal instruments related to water exist**, both at the Union and at the State levels, they are extremely **complex and multi-layered**⁶. However, two major Acts governing water protection in India will be mentioned⁷:

⁵ MoEF, Wetlands of India, 1998. Nota: the inventory excludes paddy rice, rivers and canals.

⁶ Cullet, P., Water law in India: overview of existing framework and proposed reforms, International Environmental Law Research Centre working paper, 2007-01.

Water (Prevention and Control of Pollution) Act, 1974,

This act sets up Central Pollution Control Boards and related State boards, and gives them the power to monitor, control and **give directions related to sewage and plant effluents**. State boards shall enact “a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof». They also lay down “effluent standards for the sewage and trade effluents and for the quality of receiving waters ». Standards can differ according to streams and within streams.

Environment Protection Act, 1986,

Further to the Bhopal gas tragedy in 1984, this act fixes Central government power to control and enact **prescriptions for the emissions and handling of hazardous substances** in any industrial site, in “coordination” with state agencies. The Central government may appoint authorities and officers to take such measures.

A multilayered water governance system

The Ministry of Environment and Forest is the nodal agency for overseeing the implementation of environmental legislation and programmes and of regulatory functions like environmental clearance. The Ministry of Water Resources (MoWR) is responsible for drawing up policy guidelines and for enforcing the protection of surface and groundwater resources, mainly in terms of quantity. A **national Water Policy** was published in 1987, then reviewed and updated in 2002 and 2012. However, since water is a “state subject”, the **policy guidelines are mostly of an advisory nature**. The **implementation is left to state governments and agencies**.

At the central level, various institutions have been set up to implement irrigation and water storage development projects, to issue water policies & governance guidelines, to ensure data collection and analysis or to bring assistance to state agencies. Aside from the ministry, there are the *National Water Resources Council*, the *National Water Board* that assists the former, the *Central Water Commission*, the *Central Groundwater board*, the *Central Ground Water Authority*, various national committees and national institutes, and inter-state river basin structures (*Yamuna Board*, *Narmada Board*, *Ganga River Basin Authority*, etc.).

More recently, a **National Water Mission** was created within the framework of the *National Action Plan on Climate Change* launched by the Indian government in 2008 to mitigate and adapt to climate change. The *National Water Mission* is notably in charge of:

- reviewing the National Water Policy,
- conducting research and studies on all aspects related to the impact of climate change on water resources, including quality aspects of water resources,
- implementing water resources projects, particularly the multipurpose projects with carry over storage,
- promoting the traditional system of water conservation,
- designing intensive programmes for ground water recharge in over-exploited areas,
- incentivizing recycling of water, including wastewater,
- **planning on the principle of integrated water resources development and management,**

⁷ Nota: the Biological Diversity Act, 2002 is purposely not mentioned. It was enacted to meet the obligations under the Convention on Biological Diversity (CBD), to which India is a party. It only regulates research and collection of biological resources, for trade and commercial purposes.

- ensuring convergence among various water resources programmes.

A new move is also witnessed at the state level. The article 39b of the Constitution directs the states to “adopt policies with a view to securing –(b) that the ownership and control of the material resources of the community are so distributed as best to serve the common good.” With seemingly no coordinated approach, a number of states have issued their own water policy (Kerala, Maharashtra, Rajasthan, Punjab, Andhra Pradesh, etc.) or are in the process of preparing/revising this (Pondichery UT, Goa, Tamil Nadu, Orissa, etc.).

Furthermore, some states, inspired by the 2005 national **Model Bill to Regulate and Control the Development and Management of Groundwater** and encouraged by multilateral donors funding policies, have started to prepare draft Groundwater bills, like Rajasthan⁸. This state, which drafted its Groundwater Rational Use and Management Act in 2005⁹, recently enacted a Rajasthan River Basin and Water Resources Planning Act, 2015.

Finally, courts also play a growing pro-active role in drawing up policy guidelines and enforcement, as many recent cases attest it. India has notably a salient network of NGOs, involved in projects implementation as well as in judiciary actions. A special court, the *National Green Tribunal* was set up in 2010 (*National Green Tribunal Act, 2010*) for the purpose of providing speedy environmental justice.

⁸ Birkenholtz, T., *The Politics of Groundwater Scarcity: Technology, Institutions, and Governance in Rajasthan*, Ohio State University Dissertation, 2006.

⁹ Nota: this act seems not enacted yet. According to Central Ground Water Board’s website, this act would remain subject to Central approval and would be still under consideration.

Part 2: Assessment of the Indian draft framework legislation compared to the European Water Framework Directive (WFD) and related EU water legislation

This part aims at presenting the results of the assessment of the Indian draft framework legislation compared to the WFD and related EU water legislation, such as the Urban Waste Water Directive (1991), the Drinking Water Directive (1998 -ex 1980), the Flood Risk Management Directive (2007), the Environmental Quality Standards Directive (2008), the Bathing Water Directive (2006 -ex 1976), and the Groundwater Directive (2006 -ex 1980). In addition to the comparison of the objectives and the definitions of both texts, each topic of the draft Water Framework Law (draft WFL) is examined.

1. OBJECTIVES

Though both texts aim at establishing a framework for the protection of waters, their respective objectives are quite different, as evidenced in the documents. The contexts of the emergence of these water legislation frameworks are also very different, as presented in Box 1.

The European Water Framework Directive (WFD) states in article 1 entitled “purpose”, that: *“The purpose of this Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater (...) and thereby contributes to:*

- the provision of the sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use,*
- a significant reduction in pollution of groundwater,*
- the protection of territorial and marine waters, and*
- achieving the objectives of relevant international agreements, including those which aim to prevent and eliminate pollution of the marine environment (...).”*

In contrast, the draft Water Framework Law is much more concise on its objectives. They are only mentioned in the sub-title of the Bill:

“A bill to establish a framework with governing principles for protection, conservation and regulation of waters and for matters connected therewith and incidental thereto”

Three main differences can be drawn up from these statements:

1- The WFD is a legally binding instrument while the Indian draft WFL essentially sets up some general “governing principles” applicable to the exercise of legislative and executive powers at Central, State and local levels, as stated in the draft WFL’s introduction:

“1.3 During consultation meetings for evolving National Water Policy (2012) with various stakeholders, the need to evolve a Framework Law as an umbrella statement of general principles governing the exercise of legislative and/or executive (or devolved) powers by the Centre, the States and the local governing bodies emerged.”

On the European side, the main governing principles related to water (notably prudent and rational use, precautionary principle, preventive action and damage rectification at source, polluter-pay principle) have already been fixed by the European Union Treaty. This treaty is fundamental for European Union’s action as it establishes the mandate and defines the rules of the European Union.

These principles, which belong to the “Environment section” of the Treaty, are recalled by the WFD in its “whereas” section (11 and 12):

“(11)

As set out in Article 174 of the Treaty, the Community policy in the environment is to contribute to pursuit of the objectives of preserving, protecting and improving the quality of the environment, in prudent and rational utilization of natural resources, and to be based on the precautionary principle and on the principles that preventive action should be taken, environmental damage should, as a priority, be rectified at source and that the polluter should pay.

(12)

Pursuant to Article 174 of the Treaty, in preparing its policy on the environment, the Community is to take account of available scientific and technical data, environmental conditions in the various regions of the Community, and the economic and social development of the Community as a whole, and the balanced development of its regions as well as the potential benefits and costs of action or lack of action.”

2. The European WFD is predominantly results-oriented. The article 1 “Purpose” sums up the main axes of the water framework. This framework:

- *“prevents further deterioration and protects and enhances the status of aquatic ecosystems and (...) terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;*
- *promotes sustainable water use (...);*
- *aims at enhanced protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and cessation of phasing-out of discharges, emissions and losses of the priority hazardous substances;*
- *ensures the progressive reduction of pollution of groundwater and prevents its further pollution, and*
- *contributes to mitigating the effects of floods and droughts.”*

In order to achieve most of these objectives, provisions have to be monitored at the water body level. As a consequence, the whole text, with the support of its annexes, is finely structured in order to set precise environmental objectives for each water body in every member state. These states have to set the individual environmental objectives and to publish them in the River Basin Management Plans/RBMP (the first set of RBMP was expected in 2009). Then, according to appropriate monitoring networks, Member states will assess and publish water bodies status in 2015, that should be “good” unless there are due justifications. Additional measures will then be expected by the European Authorities in the revised RPMP (2nd planning cycle), in order to bring all remaining water bodies to a “good status” in 2021, or at the latest in 2027 (3rd planning cycle, see full WFD deadlines in Annex 2 of this report).

To ensure results, the WFD urges the Member States to create due legislation with legally binding effects and related penalties, as article 23 “Penalties” mentions:

“Member States shall determine penalties applicable to breaches for the national provisions adopted pursuant to this Directive. The penalties thus provided for shall be effective, proportionate and dissuasive.”

3. The Indian text has a much greater focus on social matters. As stated in the objectives, the focus in the draft Indian law is not restricted to “water matters” but also to “(...) “matters connected therewith and incidental thereto”.

In the WFD, social matters are nearly non-existent apart from the mention of “economic and social development of the Community as a whole” and its “balanced development” in the “Whereas” section (13). This reflects the little-developed mandate of the European Union in social issues, which purposely remain within the Member States’ prerogatives. The WFD deals with a participatory approach only through public consultation on planning documents (see further details in the report, paragraph 14 Participatory Water Management).

However, in Chapter 2 of the Indian draft WFL, many basic principles for water management reflect social aspects of water. The second paragraph expressly mentions social justice and refers implicitly to local water conflicts resolution:

“(2) Local Authorities and the appropriate Government shall take all measures to plan and manage water resources equitably, sustainably, and in a socially just manner.”

Another key principle introduced by the draft WFL is the precedence of the use of water for domestic purpose (*water as a sustainer of human life* in paragraph 6), over other uses such as agricultural, industrial, or commercial uses.

In paragraph (18), the Indian text places the emphasis on affordability and pro-poor issues as it makes *water pricing on economic principles* conditional upon the *principle of differential pricing of water for the pre-emptive uses of water for drinking and sanitation* as well as upon *high priority allocation for ensuring food security and supporting livelihood for the poor*.

Finally, the Indian draft WFL also develops the participatory approach in a dedicated article, article 15 (see paragraph 14 Participatory Water Management). The text notably requires the involvement of women and other users, in the line with IWRM “Dublin principles” (see Box 2).

BOX 1: The emergence of water framework legislation in the European Union and in India, two far different contexts

In Europe, in the 80’s-90’s, a growing concern among public opinion and authorities was to strengthen environmental legislation to cope with rising health problems revealed by recent scientific research studies (cancer occurrences linked with pesticide use, air pollution, spreading of hazardous synthetic substances in effluents, etc.), and with natural heritage degradation.

Legislation related to water issues like Drinking Waters, Bathing Waters, Sanitation and Groundwaters was already in place. But this sectorial approach proved to be insufficient to deal with the aforementioned issues. In response, the European authorities wished to establish an integrated approach, taking into account the latest scientific knowledge (interrelations between surface waters and ground waters, use of biological indicators and eco-toxicological information for assessing water quality, etc.).

Since 1986, the environment has been a clear competence of the European Union (the co-decision procedure with the European Parliament and the Council). It was then possible for the European Union to enact such a Water Framework Directive with legally binding effects. Although the need to develop comprehensive European water legislation had already been identified by the Council in 1988, it took almost 10 years to finalize the WFD that was published in 2000.

On the Indian side, concerns related to water resources have predominantly raised from growing water scarcity related issues like groundwater depletion and multiple water conflicts (from local up to interstate and international conflicts). Other significant issues like health and environmental hazards, water wastage and water pollution and the gap of legal backing have

urged the *National Commission for Integrated Water Resources Development* (NCIWRD) to raise in 1999 the need of a national water framework legislation. Although a national Water Policy was published in 1987, then updated in 2002 and 2012, this text has no legal effect.

However, as water is primarily a State subject according to the Constitution, the legitimacy of a framework legislation at the national level has been questioned, either by scholars or by state representatives. Yet, in the preparation of the 12th Indian Five-year Plan, the Working Group on Water governance (WFL sub-group) drew up a draft Water Framework Law (2011) to be enacted under article 252 of the Constitution.

In this context, the current draft Water Framework Law (2013) aims at laying down common fundamental governing principles, inspired by the National Water Policy 2012, and “making those principles justiciable”. Moreover, as stated in the introduction of the draft WFL (1.4), this text meets the expectations of states representatives themselves, which “have acknowledged that they require a strong push from the Centre to make their establishment recognize the critical stage of water development”.

2. DEFINITIONS

1. As for the sets of objectives, the differences between both texts’ set of definitions reflect the divergence of approach: one more environment & science-oriented (European Union), one more social issues & policy-oriented (India). In the Indian text, an emphasis is clearly put on social justice and governing principles, rather than on scientific and technical definitions as in the WFD. As a consequence, not surprisingly, the texts have only 2 definitions in common (*aquifer* and *river basin*).

The European text provides 41 definitions while the Indian text provides 30 definitions (see detailed in Annex 1 of this report). Among them, 35 WFD definitions belong to scientific and technical lexica, while 11 only in the Indian text. In the European text, 9 definitions refer to “good” or not good “status of water body”.

Furthermore, 7 out of 30 Indian definitions are related to social and economic aspects (like *eligible households*, *livelihood*, etc. see Annex 1), while only 4 out of 41 in the European text. Six definitions are related to governing principles in the Indian draft WFL. Finally, 2 to 3 definitions are related to governance aspects in both texts, and about 1 to 2 definitions are related to management and administrative aspects (like *emissions control* or *IndiaWRIS*).

2. There is a limited convergence among the governing principles laid down by the two texts. The Indian draft WFL lays down general governing principles in its chapter 2 “Basic principles for water management”, some of which are defined through the definitions section (chapter 1 “Preliminary”). Among the 6 governing principles definitions in the draft WFL, 3 converge with the European ones. These principles are *participatory management* (see details in paragraph 14 p.), the *precautionary principle* and *sustainable use* (the European Union treaty mentions rather “prudent and rational use”, but the WFD mentions “sustainable use of water” in its article 1 and in “Whereas” section).

However, the 3 remaining principles diverge from the European approach as indicated in Table 1.

Table 1: Divergence among governing principles

<u>Draft WFL principles</u>	<u>Corresponding WFD and European legislation principles</u>	<u>Presumed reasons for divergence</u>	<u>Remaining questions</u>
<i>Water = Common pool resource</i>	<i>Water = Common heritage</i>	The Indian concept refers to property regimes, which is out of the WFD's mandate.	What are the consequences of this principle on current property rules in India? Could the draft WFL be more explicit on them?
<i>Integrated river basin development and management</i>	<i>Integrated water resources management</i>	See details in paragraph 6 Integrated River Basin Development and Management	
<i>Principle of differential pricing</i>	<i>Principle of recovery of costs of water services</i> <i>Polluter pays principle</i>	The focus in the Indian text is on social matters: the <i>differential pricing principle</i> recalls the importance of the notion of "affordability" in the Indian context versus the strict application of the cost-recovery principle.	National Water Policy 2002 refers to Polluter pays principle, but it's no more present in National Water Policy 2012. How to explain it?

3. Finally, concerning the definitions of the *surface water status (WFD)* versus the *ecological integrity of water and other resources (draft WFL)*, those definitions converge in the sense that both refer to "biological, chemical and physical aspects of the aquatic environment". Nevertheless, as further elaborated in paragraph 4 Preservation of quality, the WFD stipulates far higher requirements on water status assessment and results.

3. RIGHT TO WATER

The introduction of a Right to Water is a key provision of the draft WFL:

"(1) Every individual has a right to a minimum quantity of potable water for essential health and hygiene and within easy reach of the household."

As mentioned in the introductory chapter 3 of the draft WFL, this decision refers to the Right to Water recognized in 2010 by the United Nations General Assembly through Resolution 64/292. The draft WFL leaves to the "appropriate government" the prescription for the quantity of the "minimum quantity of potable water" (with a minimum of 25 liters) and the prescription for the quality standards of the water supply.

This topic has no equivalent mention in the European text.

4. PRESERVATION OF QUALITY

Both texts share the same objective of preserving water quality, as it's a key component of water security, human health and conservation of ecosystems. As mentioned in paragraph 1 Objectives, **this topic is central to the WFD and the European legislation**, with a high level of precision in the prescriptions. A key innovation of the WFD is the introduction of biological indicators (*biological quality elements*) for water quality assessment (*surface water ecological status*).

The European approach also tries to reach an exhaustive inventory of potential pollutants. As an illustration, in the application of WFD's article 16, the Directive on Environmental Quality Standards (Directive 2008/105/EC) sets environmental quality standards (EQS) in the surface waters for 41 priority substances or other pollutants presenting a significant risk to or via the aquatic environment. Good chemical status is achieved for a water body when it complies with the EQS for all the 41 substances. Nevertheless, these requirements bring significant monitoring costs and implementation difficulties, as EQS are generally very low (sometimes 10 to 1000 times less than 1 microgram per liter) and can sometimes be measured in sediment or living matter.

Moreover, the list of substances shall be regularly revised to meet with accurate scientific knowledge. A list of 15 additional pollutants is currently under consideration.

In contrast, article 5 Preservation of Water Quality in the draft WFL essentially recalls general measures as:

"(i) minimising the generation of waste in all water uses, reducing non-point source of pollution, recovering, to the extent possible, water for some uses from waste and ensuring that nothing that does not meet certain stringent quality standards, as may be prescribed, is allowed to enter water sources."

5. WATER PRICING

The water pricing approach is important for water resources preservation according to both texts. As presented in table 1, the cost-recovery approach is promoted by the European WFD, but its full or partial implementation is left to Member states' political decisions, *having regard to the social, environmental and economic effects of the recovery (...)*.

Article 9 (fully presented in Annex 3 of this report) states:

"Member States shall take account of the principle of recovery of the costs of water services (...)"

But the WFD also requests that *by 2010, the Member States shall ensure*

- *"that water-pricing policies provide adequate incentives to use water resources efficiently (...)*
- *an adequate contribution of the different water uses (...) to the recovery of the costs of water services (...)"*

In this domain, the Indian draft WFL has a more social-oriented approach and instead requires:

- the establishment of an *Independent statutory Water Regulatory Authority* in every state for the fixation of water pricing,
- the determination of *water charges on a volumetric basis*, and their review *in order to meet equity, efficiency and economic principles*,
- the incentivization of *water recycling and reuse*,
- the need for *differential pricing for drinking and sanitation*.

An implicit objective of these provisions is to **ensure a minimal regulation of private participation in water supply and sanitation services**. This topic is indeed a sensitive issue in India as a number of NGOs are campaigning against private sector's role in water issues.

6. INTEGRATED RIVER BASIN DEVELOPMENT & MANAGEMENT

Both texts refer to the river basin scale for appropriate planning and management, but the proposed means, authorities and tools to achieve river basin planning and management are quite different.

1. A first important difference is the term *development* in the Indian wording that is not present in the European one, in association with water resources. The Indian text explicitly refers to the "Dublin principles" (see Box 2), which mention *Integrated Water Resources Development and Management*. In the Indian context indeed, the importance of new water resources development is considered vital. It seems that demand-side management and wastage reduction measures are perceived as necessary, but unable, to deal with water scarcity in most of the situations. As an illustration, a recent study of the Center for Development and Management of Water Resources, Kerala related to Chaliyar river basin's water accounts have shown that the present deficit of Chaliyar basin (about 133 MCM of water during non monsoon period) will nearly double to 214 MCM by 2040. The study concluded that "*a few more projects are needed for the sustainable development of the river basin* ».

In the European directive, however, development of new water resources (construction projects, desalinization plants) is only mentioned in the annex VI part B, among the possibilities of complementary measures to achieve water body environmental objectives.

Box 2: The origins of the Integrated Water Resources Management (IWRM) principles or "Dublin principles"

The New Delhi Statement adopted at the United Nations Global Consultation on Safe Water and Sanitation in 1990 was first to introduce the notion of integrated water resources management in international arenas. The IWRM principles were later developed in the Dublin Statement. This Statement was drafted as a conclusion of the International Conference on Water and the Environment (ICWE) organized in Dublin in January 1992 by the ISGWR (United Nations ACC Inter-Secretariat Group for Water Resources).

According to the conference report, the 4 guiding principles to achieve Integrated Water Resources Development and Management are:

1. The need for a holistic approach, with a look at the whole water cycle and at inter-sectoral needs including an ecological approach.
2. The need for a participatory approach in institutions and arrangements for water development and management, involving water users and the general public.
3. The need to recognize the central role of women played in the provision, management and safeguarding of water.
4. The recognition that water has an economic value and, therefore, should be considered as an economic good.

2. None of the frameworks impose the creation of a dedicated organization for each river basin. However, a competent authority has to be designated for each river basin in the European approach.

The Indian draft states that in article 7:

(5)

“The State may set up appropriate organizations for each intra-State river basin or sub-basin for planning and management of water resources as per provisions of this Act”.

As a consequence, some river basins may not be headed by a specific river basin organization. But no explicit mention is made on the appropriate authority that must then take charge of these river basins.

The WFD left the responsibility of defining appropriate administrative arrangements to the Member states, in article 3 “Coordination of administrative arrangements within river basin districts”:

“2. Member States shall ensure the appropriate administrative arrangements, including the identification of the appropriate competent authority, for the application of the rules of this Directive within each river basin district lying within their territory”.

However, the European directive requires that a competent authority is designated for each river basin. Annex 1 of the directive details the information that is required for each competent authority, for example, its legal status and its legal and administrative responsibilities. The Member States must also provide the geographical coverage of the river basin district with a precise description of the boundaries.

3. The WFD requires a River Basin Management Plan (RBMP) for each river basin while, in the Indian approach, a River Basin Master Plan is required only where a river basin organization has been set up by the state.

In the European approach, the River Basin Management Plan is the key tool to achieve the directive objectives. In this regard, the whole territory of Member States must be covered by river basin districts (or by a portion of a river basin district, in the case of international river basins) and an RBMP must be drafted on every river basin district.

In the Indian draft WFL, the paragraphs 6 and 7 of Chapter 4, article 7 only refer to the “river basin organization” for the preparation of a “status report” and of a “River Basin Master Plan”. As a consequence, one may expect that these documents will only progressively cover the territory of India. In this approach, the governance process (creation of a river basin organization, which implies political decision) should precede the technical approach (drafting of a plan).

4. The content of the River Basin Plans could largely differ between the two approaches.

In the Indian draft WFL, the River Basin Master Plan’s content is not fully developed, apart from the *Environmental protection plan* (article 7, paragraph 8, *including cumulative environment impact assessment*). A *status report of the river basin* should precede and feed the River Basin Master Plan (article 7, paragraph 6).

Two other pieces of information may also be incorporated in preparation of the River Basin Master Plan:

- the assessment of *demand of water for various uses in accordance with the standardized water footprints* (Chapter article Basic guidelines, paragraph 14)
- the *perspective plans for sustainable development of water resources ensuring water security for the year 2025 and 2050*, at district, state and country level to be prepared by High Powered Committee (Chapter 7, article 18 Coordination and Policy support mechanism).

In contrast, the European WFD is extremely prescriptive on the RBMP’s content: the information

required by the directive in each RBMP is presented in a 2 pages long annex (see the extensive list of required information in Annex 8 of this report). This list contains the description of the characteristics of the river basin, the summary of significant pressures and impact of human activity on the status of surface water and groundwater, the environmental objectives set for each water body, the map of registered zones, the map of the monitoring networks, etc.

Moreover, a programme of measures has to be set for river basin district (WFD article 11). This programme must recall measures from existing legislation (basic measures) and establish supplementary ones in order to meet the environmental objectives set to each water body in the district (see detailed provisions of the WFD annex VI in Annex 7 of this report).

7. WATER RESOURCES INFORMATION SYSTEM

Both entities recognize the need for setting up an operational national information system to aggregate water data, using recent technologies and tools like GIS or satellite imagery. The National Water Policy 2012 has introduced the need for such a national platform. In the draft WFL, this platform is named IndiaWRIS and it's already operational.

In both cases, the system is designed to provide information to the public. State data in India, as national data in Europe, shall feed these systems. IndiaWRIS, to be hosted by a National Water Informatics Center, has thus its exact counterpart in Europe: the WISE system (*Water Information System for Europe*, <http://water.europa.eu>), hosted by the European Environment Agency (<http://www.eea.europa.eu/themes/water>). The *Water Data Centre* is part of WISE and provides the European entry point for water related data. The public can access the catalog of European datasets, interactive maps and indicators on its website.

8. MANAGEMENT OF FLOODS AND DROUGHTS

Recent flood and drought disasters have occurred in both areas, affecting human lives and activities, most notably in agriculture. However, the European legislation has given more attention to flood regulation. **A Flood Directive was issued in 2007** with the intention complement the WFD with regards to flood risk management and focuses on prevention, preparedness and protection measures. **The objective is to develop a planning approach with the successive drafting of preliminary flood risk assessments, flood hazard maps, flood risk maps and flood risk management plans.**

In contrast, the draft WFL promotes a series of measures, rather than a planning approach. As an illustration, the mention by National Water Policy 2012 of "*frequency based flood inundation maps*" is not kept in the draft WFL. The text instead mentions the following measures: rehabilitation of natural drainage system, preparation of emergency action plans and disaster management plans, expansion of flood forecasting systems with real-time data acquisition and appropriate operating procedures for reservoirs.

The role of soil in absorbing water and thus mitigating the negative effect of floods and drought is also mentioned by the Indian text, in section 16 Promotion of Innovation and Technology. In this section, a "*better land-soil-water management* » is required, with "*scientific inputs from local research and academic institutions, such as adoption of compatible agricultural strategies and cropping patterns and improved water application methods* ». The European Flood directive (2007) requires flood risk management plan to contain soil management measures in order to retain floodwater. Moreover, the key role of soil water retention processes for

preventing flood and drought has been emphasized in a recent European publication¹⁰ (2014).

9. PROJECT PLANNING AND MANAGEMENT

The European WFD does not develop this topic. As the directive is results-oriented, the text does not provide any framework for water project planning and management. Projects planning and management will be taken care of by the River Basin Management Plans or by the existing legislation.

In the draft WFL, however, the article 10 Project Planning and Management provides strategic provisions as the conformity of all water resources projects to the River Basin Master Plan (paragraph 2) and the need to take into account *possible future scenarios, including climate change* in project planning and management (paragraphs 3 and 4).

10. INSTITUTIONAL ARRANGEMENTS FOR WATER SHARING AND TRANS-BOUNDARY ISSUES APPROACH

Only the Indian text mentions institutional arrangements for water sharing. As mentioned in Part 2: Water Situation in India, water conflicts and water allocation are critical issues in India. The WFD does not deal with these issues as water allocation is managed at the member state level. Besides, the European Union has no mandate for inter-member state conflict over water as is the case for the central level in India. In Europe, only international conventions or agreements apply to those cases. Besides, old river basin institutions sometimes preceded the WFD (for example, Danube Commission or Central Commission for the Navigation of the Rhine).

Both texts take care of “trans-boundary” issues, but only within India for the draft WFL. The common principle is that constructive collaboration between co-basin states or co-basin member states should occur for the planning and management of inter-state or international river basins (Draft WFL, Chapter 4, article 7 River Basin Development and Management/WFD article 3 Coordination of administrative arrangements within river basin districts).

The WFD recommends the establishment of a single River Basin Management Plan for an international river basin district (article 13, paragraphs 2 and 3). Member states shall ensure the coordination and the designation of the appropriate competent authority. In any case, member states remain responsible of the application of the WFD rules within their territory (WFD article 3). They must at least produce a partial RBMP covering their territory if a single RBMP for the international district can't be produced (article 13).

11. GROUNDWATER REGULATION AND MANAGEMENT

The ground water issues are key for both water frameworks. The draft WFL gives a stronger attention to ground waters relative to other water bodies like rivers, lakes, ponds, lagoons, etc as article (12) is the only article dedicated to one type of water body. Groundwater depletion is indeed a key concern in India, notably for agriculture productivity (see Part 2, Water situation in India).

¹⁰ BIO Intelligence Service (2014), Soil and water in a changing environment, Final Report prepared for European Commission (DG ENV), with support from HydroLogic

Many inter-sectoral measures are mentioned in article 12, among them the need to regulate the use of electricity for its extraction with appropriate pricing and separate electric feeders for pumping ground water for agricultural use or the need to plan and implement safeguards to protect the quality of groundwater while giving licenses for mining and industrial activities.

Other measures are related to recharge zones: demarcation of groundwater zones and of critical natural recharge areas, with highest priorities to be given to these zones in term of regulation and protection.

In the WFD, special attention is also given to ground waters (see details in Annex 6 of this report). First, existing European legislation includes provisions, for the protection of drinking water catchment areas. In addition, the WFD stipulates that Member states “*shall ensure a balance between abstraction and recharge of groundwater*” with the aim of achieving good groundwater status in 2015, like for other water bodies. But Member States shall also “*implement the measures necessary to reverse any significant and sustained upward trend in the concentration of any pollutant (...) in order progressively to reduce pollution of groundwater*”.

As with other water bodies, the WFD provisions for ground waters are very detailed concerning the required monitoring, in addition to existing legislation mandatory monitoring processes.

12. URBAN WATER MANAGEMENT

In the draft WFL, social issues and some operational aspects related to urban water management are developed in article 13 Urban water management, without results-oriented objectives. There are instead general principles like the reuse of water, community participation, metering of water and water pricing on a volumetric basis.

The European directive does not specifically mention urban waters. However, **European legislation was already in place with the Drinking water directive (1980, modified in 1998) and the Urban Waste Water Treatment directive (1991)**. These directives set up appropriate water treatment processes and water quality standards to water supply and sanitation services (see overview of both directives in Annex 4 and Annex 5 of this report). The WFD recalls the obligations set by the existing legislation. Moreover, the text states that implementing these directives will help to achieve good status for water bodies.

13. INDUSTRIAL WATER MANAGEMENT

The European WFD almost does not mention industrial water management, as it's related to means and not results. Besides, there is already a European legislation in place that deals with industrial effluents treatment (as well as production of waste, etc.), mainly the **Industrial Emissions Directive 2010/75/EU, formerly known as the Integrated Pollution Prevention and Control (IPCC) Directive**. This directive sets out the main principles for the permitting and control of industrial installations, based on an integrated approach and the application of best available techniques¹¹.

Still, according to WFD article 11, the programme of measures of the River Basin Management Plan have to prescribe supplementary measures to existing legislation in order to meet water bodies environmental objectives. A list of proposed supplementary measures to be placed in the

¹¹ Nota: according to the directive 2010/75/EU, the Best Available Techniques are the most effective techniques to achieve a high level of environmental protection, taking into account the costs and benefits.

programme of measures appears in WFD annexes (annex VI part B, see in Annex 7 of this report). Among these measures, one deals with industrial water management:

*“(x) efficiency and reuse measures, inter alia, **promotion of water-efficient technologies in industry and water-saving irrigation techniques**”*

In contrast, **in the draft WFL, a whole paragraph is dedicated to this issue.** A set of management principles and measures is established, ranging from promoting incentives to encouraging water recycling & reuse to requiring mandatory reporting for larger water consumer industry (consuming more than 1 million m³ par annum). The required information includes *an annual water returns report with fresh water consumption.*

14. PARTICIPATORY WATER MANAGEMENT

The participatory water management, one of the key principles of Integrated Water Resources Management (IWRM) approach, is emphasized in both texts. The National Water Policy 2002 already introduced this term in India.

The draft Indian WFL further develops this approach with the mention of *indigenous knowledge* to be promoted (article 16, Promotion of Innovation and Technology), *community-based approach* or *institutions* and notably *Water Users Associations’* reinforced role (article 15, Participatory Water Management).

Public consultation is the main tool chosen by both water frameworks in this regard. In the Indian draft WFL, a public consultation is mandatory for the prescription of the *minimum quantity of potable water* (article 4, Right to Water), along with expert examination. Besides, the status report of the river basin, prepared by the river basin organization, must *remain in the public domain and must be available on the website* (article 7, paragraph 6).

According to the European WFD (article 14, Public information and consultation), all planning documents have to be subject to public consultation, in each planning cycle. The directive set firm deadlines for these procedures.

15. COORDINATION AND POLICY SUPPORT MECHANISM

To ensure coordination and policy support for either member states or Indian states, both approaches set up similar mechanisms. In the draft WFL, a **national high-powered committee** shall be established, according to article 18. The European directive does not mention any mechanism, but a **Common Implementation Strategy** was later set up by the European Commission to pursue these objectives. A number of guidance documents have already been published on various WFD topics¹².

The draft WFL further prescribes, in the Coordination and policy support mechanism section, the **creation of a High Powered Committee in each state.** These expert committees are designed to give key support to River Basin Authorities and RBMPs drafting. They should issue studies and guidance documents. Notably, they are notably required to prepare a **perspective plan for the sustainable development of water resources ensuring water security by the years 2025 and 2050, for each district and each state.** A similar countrywide plan shall be prepared by the national High-Committee. However no deadlines are provided for the

¹² Nota: Common Implementation Strategy guidance documents are available at:
http://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm

publication of these documents. Neither the structure nor the composition of the state High Powered Committees is framed by the text.

16. ENFORCEMENT OF THIS ACT / IMPLEMENTATION

Both texts require the enforcement of the water framework through appropriate Member states/states legislative measures, but the texts diverge greatly on the means to achieve their implementation. The European approach uses deadlines, mandatory reporting procedures and penalty provisions to ensure the enforcement and the implementation of the directive's objectives. None of these tools are mentioned in the draft WFL. As mentioned before in this report, the questioned legitimacy of a national water framework law in India does not ease assertive provisions as the European WFD ones. However, as a reminder, the WFD enactment has required a long process to reach political consensus.

Part 3: Policy and technical recommendations stemming from the comparison

These recommendations are drawn from the assessment study. Topics for which the European approach and WFD processes may add value to the draft Indian water framework bill and to its further implementation have been selected. This work will be discussed with Indian administrative officers and stakeholders during the November 2015 meetings in Delhi.

1. RECOMMENDATIONS AT THE TEXT LEVEL

Further clarity could be brought to some existing provisions of the draft text on the following issues:

- respective position, legal status and administrative responsibilities of the institutions or organizations set up or mentioned by the text (river basin/sub-basin organization, high-powered committees, appropriate agency for each river basin/sub-basin to collect and collate all data with regard to water).
- current institutions/authorities that could be the “appropriate government” to “specify the quality standards of water supply”, to “expand flood forecasting”, to “lay down principles for allocation of water resources” or to “demarcate groundwater recharge zones for water sharing”.
- respective interactions and coordination required in preparation of River Basin Master Plans and of Perspective Plan for sustainable development of water resources ensuring water security for the years 2025 and 2050 for each district, state and for the entire country.

2. POLICY RECOMMENDATIONS

Significant differences in the Indian and European Union’s social, political and environmental contexts do not allow for easy policy recommendations for the Indian water framework bill. Nevertheless, in some areas, both entities face quite similar challenges. Further collaboration and joint projects between India and the European Union should therefore focus on these themes.

The first proposed topic is **urban water management**, where Indian needs are huge and the European experience is solid, in terms of legislation and in terms of technologies and practises. Improvement of drinking water supply and sanitation are indeed the current key urban water concerns in India due to critical health issues.

Besides, as it has become a growing concern in Europe, the spread of urbanization increases soil sealing and related problems (urban flooding, pressures on water resources, “urban heat island” effect, etc.). Sharing experience of “light”, cost-efficient solutions to mitigate soil sealing, such as green infrastructure or natural rainwater harvesting systems may be of interest for the Indian side, as well as compensating solutions (reusing topsoil, sealing fees, etc.)¹³.

¹³ European Commission, Guidelines on best practice to limit, mitigate or compensate soil sealing, 2012.
Nota: 75% of the European population currently live in urban areas, and by 2020 it is estimated that this figure will increase to 80%.

A second topic of interest is **flood management** as both areas have, in recent years, suffered several events, which have led to casualties and severe economic losses (2013 Uttarakhand disaster, 2013 Danube & Elbe floods in Central Europe). Besides, in the global context of climate change, more and more human activities are being concentrated in floodplains and landslide-prone areas. The 2007 European Flood directive, with its detailed provisions, could inspire the draft Indian Water Framework Law's article 9 and further Indian legislation or relevant guidance documents. *The objective would be to ensure a better anticipation of flood disasters countrywide with adequate information drawn up according to a national framework.* Flood hazard maps should be prepared with the available data and be revised when more accurate scientific information is released.

On **water scarcity reduction**, further exchanges should also take place as both entities are developing interesting initiatives ("green infrastructures" or natural water retention measures in Europe, numerous "water harvesting" initiatives in India¹⁴, water-efficiency technologies, soil retention management, etc.). *Joint visits and pilot projects and programmes could be organised.*

Another area where European experience could prove useful to Indian legislative framework would be the **integrated approach of water and biodiversity measures**. Biodiversity is a matter that is treated seriously by India and by the European Union (both are parties to the Nagoya Protocol of the UN Convention on Biological Diversity). On the ground, water and biodiversity issues are very much interconnected. Thus, to improve financial and technical efficiency, it would be worth merging measures for water protection and for biodiversity conservation. *River basin management plans should therefore be used as a tool for planning and monitoring biodiversity conservation measures.* This should be looked at particularly in coastal and mountain areas.

Finally, on **governance aspects**, the central legislation of both India and Europe has to deal with two contradictory objectives:

- ensuring the subsidiary principle, which means leaving the decision to the authorities at the lowest possible level, and
- ensuring the achievements of results on the ground, countrywide without exception.

The European approach has been to build a technically detailed legally binding framework that all member states have to comply with, in a specified timeframe, with financial penalties in case of non-compliance. But only member states are held accountable and risk penalties. Thus, they have to define their own means of adjusting their body of legislation and of dealing with the lower levels of governance for implementation. In this context, designing a framework mostly lies in the definition of key principles and of the results to be achieved.

In India, as some states have already drawn up State Water Policies (see part 2: Water Situation and current legislative framework), logically, they should also draw up a State Water Framework Law. *Discussions could be launched with Central and State levels representatives on the design of results-oriented provisions inspired by the WFD.* These provisions could be introduced in the draft Indian Water Framework Law, to be later integrated in future State Water Framework legislations. Mandatory reporting provisions should also be dealt with.

¹⁴ Rules that make water-harvesting system compulsory for new buildings (and even for some existing ones) are in place in Bangalore, in Tamil Nadu, etc. Rehabilitation of traditional rural water-harvesting systems gets also an increased attention.

3. TECHNICAL RECOMMENDATIONS

On operational aspects, technical and methodological exchanges, as well as further scientific collaborations could also be launched on the following issues:

- **River basin management cycle approach and river basin plans drafting**

According to the «Whereas» section (29) of the WFD, in order to spread the costs of implementation, a phase implementation or a planning cycle approach has been introduced by the WFD.

This approach as well as the European experience of 124 RBMPs already drafted may prove useful for the Indian side to accompany the drafting of the River Basin Master Plans. Technical workshops on how to deal with heterogeneous and insufficient data or how to integrate climate change scenario or demand-side management measures in future scenarios could be organized.

European guidance documents on River Basin Management plans and monitoring networks implementation could be of interest for the Indian authorities in charge of supporting river basin organizations.

- **use of biological indicators for water quality assessment**

The use of **biological indicators** to assess water quality has proved to be cost-effective and scientifically more accurate than traditional pollutant measures in water column and sediment. The WFD experience in this domain could be discussed with Indian counterparts, notably with *Central Pollution Control Board* staff and *State Pollution Control Board* representatives. It seems indeed that new binding water quality standards within water bodies can only be defined by *Central Pollution Control Board*, in consultation with State authorities, according to the Water (Prevention and Control of Pollution) Act, 1974 (“stream standards”).

If Indian Authorities wish to go further, the national Water Framework Law could then determine the range of water quality standards to be defined and the required timeframe for their notification by CPCB. The annex V of the WFD could inspire some of those provisions. Monitoring strategies could also be dealt with.

- **country-wide water data collection, processing and publishing**

In order to help India in developing its IndiaWRIS tool, a cooperation project could be set up amongst the data dedicated institutions supporting IndiaWRIS in India and WISE in Europe, or the European Water Data Center. Visits, training programmes or even joint development projects could be envisaged.

ANNEX 1 - Comparison of Water Framework Directive and draft Indian Water Framework Law definitions

COMPARAISON OF WFD & DRAFT WFL DEFINITIONS				
		scientific/technical aspects		
		governance aspects		
		socio/economic aspects		
		governing principles		
		management/administrative aspects		
WFD			WFL	
aquifer			appropriate government	
artificial water body			aquifer	
available groundwater resource			base flow	
body of groundwater			common pool resource	
body of surface water			community based institutions	
coastal water			corporatisation	
combined approach			ecological integrity	
competent authority			ecological needs	
direct discharge to groundwater			eligible households	
ecological status			environment impact assessment	
emission controls			IndiaWRIS	
emission limit values			integrated water development and management	
environmental objectives			livelihood	
environmental quality standard			local authority	
good ecological potential			non-point source of pollution	
good ecological status			National Water Policy	
good groundwater chemical status			overdrawal of groundwater	
good groundwater status			pre-emptive needs	
good quantitative status			participatory management	
good surface water chemical status			precautionary principle	
good surface water status			prescribed	
groundwater			principle of differential pricing	
groundwater status			privatisation	
hazardous substances			public trust	
heavily modified water body			river basin	
inland water			sustainable use	
lake			water resources	
pollutant			water footprint	
pollution			water-harvesting	
priority substances			watershed	
quantitative status				
river				
river basin				
river basin district				
sub-bassin				
surface water				
surface water status				
transitional waters				
water intended for human consumption				
water services				
water use				
41 definitions			30 definitions	

ANNEX 2 – Key milestones of the European Water Framework Directive and requirement deadlines

Year	Issue
2000	Directive entered into force
2003	Transposition in national legislation Identification of River Basin Districts and Authorities
2004	Characterisation of river basin: pressures, impacts and economic analysis
2006	Establishment of monitoring network Start public consultation (at the latest)
2008	Present draft river basin management plan
2009	Finalise river basin management plan including programme of measures
2010	Introduce pricing policies
2012	Make operational programmes of measures
2015	Meet environmental objectives First management cycle ends Second river basin management plan & first flood risk management plan.
2021	Second management cycle ends
2027	Third management cycle ends, final deadline for meeting objectives

ANNEX 3 – Water pricing issues in European Water Framework Directive (article 9)

Article 9

Recovery of costs for water services

1. Member States shall take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to the economic analysis conducted according to Annex III, and in accordance in particular with the polluter pays principle.
L 327/12 EN Official Journal of the European Communities 22.12.2000

Member States shall ensure by 2010

. that water-pricing policies provide adequate incentives for users to use water resources efficiently, and thereby contribute to the environmental objectives of this Directive,

. an adequate contribution of the different water uses, disaggregated into at least industry, households and agriculture, to the recovery of the costs of water services, based on the economic analysis conducted according to Annex III and taking account of the polluter pays principle.

Member States may in so doing have regard to the social, environmental and economic effects of the recovery as well as the geographic and climatic conditions of the region or regions affected.

2. Member States shall report in the river basin management plans on the planned steps towards implementing paragraph 1 which will contribute to achieving the environmental objectives of this Directive and on the contribution made by the various water uses to the recovery of the costs of water services.

3. Nothing in this Article shall prevent the funding of particular preventive or remedial measures in order to achieve the objectives of this Directive.

4. Member States shall not be in breach of this Directive if they decide in accordance with established practices not to apply the provisions of paragraph 1, second sentence, and for that purpose the relevant provisions of paragraph 2, for a given water-use activity, where this does not compromise the purposes and the achievement of the objectives of this Directive. Member States shall report the reasons for not fully applying paragraph 1, second sentence, in the river basin management plans.

ANNEX 4 – Overview of the Drinking Water Directive (1998)

The Drinking Water Directive (Council Directive 98/83/EC) of 3 November 1998 on the quality of water intended for human consumption) concerns the quality of water intended for human consumption. Its objective is to protect human health from adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.

The Drinking Water Directive applies to:

- all distribution systems serving more than 50 people or supplying more than 10 cubic meter per day, but also distribution systems serving less than 50 people/supplying less than 10 cubic meter per day if the water is supplied as part of an economic activity;
- drinking water from tankers;
- drinking water in bottles or containers;
- water used in the food-processing industry, unless the competent national authorities are satisfied that the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form.

The Drinking Water Directive doesn't apply to:

- natural mineral waters recognised as such by the competent national authorities, in accordance with Council Directive 80/777/EEC of 15 July 1980 on the approximation of the laws of the Member States relating to the exploitation and marketing of natural mineral waters and repealed by Directive 2009/54/EC of 18 June 2009 on the exploitation and marketing of natural mineral waters; and
- waters which are medicinal products within the meaning of Council Directive 65/65/EEC of 26 January 1965 on the approximation of provisions laid down by law, regulation or administrative action relating to medicinal products and repealed by Directive 2001/83/EC of 6 November 2001 on the Community code relating to medicinal products for human use.

The Directive laid down the essential quality standards at EU level. A total of 48 microbiological, chemical and indicator parameters must be monitored and tested regularly. In general, World Health Organization's guidelines for drinking water and the opinion of the Commission's Scientific Advisory Committee are used as the scientific basis for the quality standards in the drinking water.

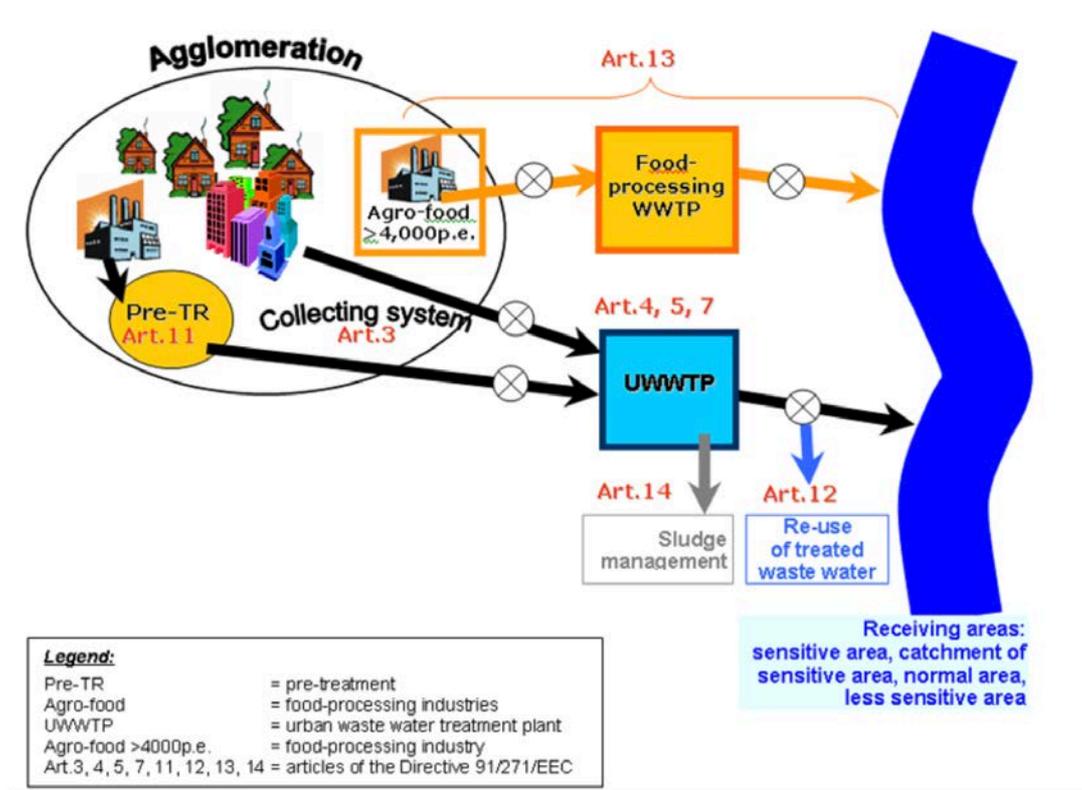
When translating the Drinking Water Directive into their own national legislation, Member States of the European Union can include additional requirements e.g. regulate additional substances that are relevant within their territory or set higher standards. Member States are not allowed, nevertheless, to set lower standards as the level of protection of human health should be the same within the whole European Union.

Member States may, for a limited time depart from chemical quality standards specified in the Directive (Annex I). This process is called "derogation". Derogations can be granted, provided it does not constitute a potential danger to human health and provided that the supply of water intended for human consumption in the area concerned cannot be maintained by any other reasonable means.

The Directive also requires providing regular information to consumers. In addition, drinking water quality has to be reported to the European Commission every three years. The scope of reporting is set out in the Directive. The Commission assesses the results of water quality monitoring against the standards in the Drinking Water Directive and after each reporting cycle produces a synthesis report, which summarizes the quality of drinking water and its improvement at a European level.

source: http://ec.europa.eu/environment/water/water-drink/legislation_en.html

ANNEX 5 – Overview of the Urban Wastewater Treatment Directive (1991)



The **Council Directive 91/271/EEC concerning urban waste-water treatment** was adopted on 21 May 1991. Its objective is to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors (see Annex III of the Directive) and concerns the collection, treatment and discharge of:

- Domestic waste water
- Mixture of waste water
- Waste water from certain industrial sectors (see Annex III of the Directive)

Four main **principles** are laid down in the Directive:

- Planning
- Regulation
- Monitoring
- Information and reporting

Specifically the Directive requires:

- The Collection and treatment of waste water in all agglomerations of >2000 population equivalents (p.e.);
- Secondary treatment of all discharges from agglomerations of > 2000 p.e., and more advanced treatment for agglomerations >10 000 population equivalents in designated sensitive areas and their catchments;
- A requirement for pre-authorization of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems;
- Monitoring of the performance of treatment plants and receiving waters; and
- Controls of sewage sludge disposal and re-use, and treated waste water re-use whenever it is appropriate.

source: http://ec.europa.eu/environment/water/water-urbanwaste/index_en.html

ANNEX 6 – Overview of the Groundwater directive (2006)

The Groundwater Directive (2006/118/EC) establishes a regime which sets groundwater quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. The directive establishes quality criteria that takes account local characteristics and allows for further improvements to be made based on monitoring data and new scientific knowledge. The directive thus represents a proportionate and scientifically sound response to the requirements of the Water Framework Directive (WFD) as it relates to assessments on chemical status of groundwater and the identification and reversal of significant and sustained upward trends in pollutant concentrations. Member States will have to establish the standards at the most appropriate level and take into account local or regional conditions.

The Groundwater Directive complements the Water Framework Directive (WFD). It requires:

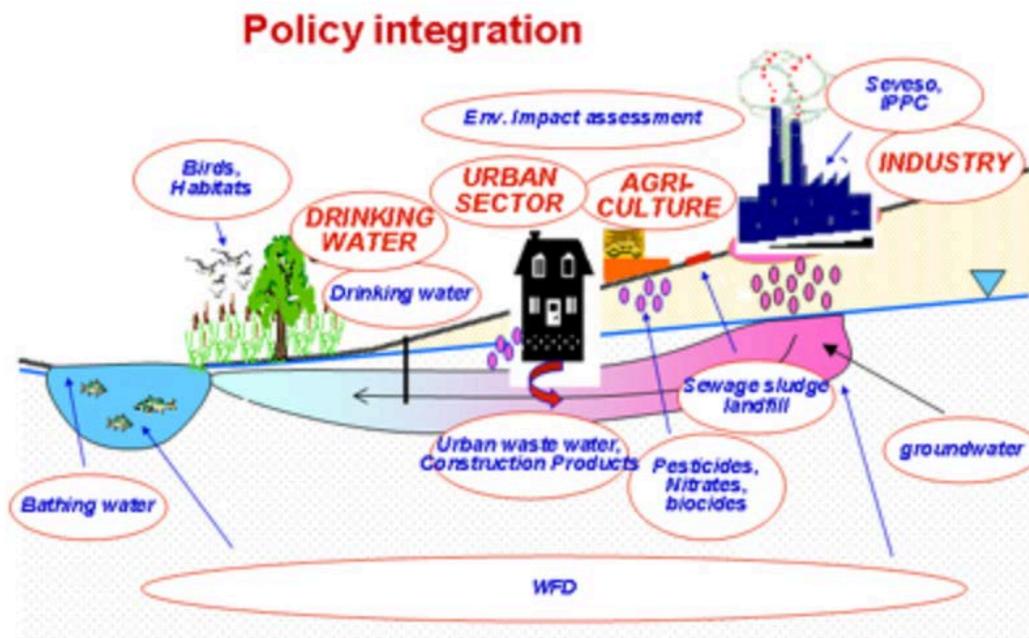
- groundwater quality standards to be established by the end of 2008;
- pollution trend studies to be carried out by using existing data and data which is mandatory by the WFD (referred to as "baseline level" data obtained in 2007-2008);
- pollution trends to be reversed so that environmental objectives are achieved by 2015 by using the measures set out in the WFD;
- measures to prevent or limit inputs of pollutants into groundwater to be operational so that WFD environmental objectives can be achieved by 2015;
- reviews of technical provisions of the directive to be carried out in 2013 and every six years thereafter;
- compliance with good chemical status criteria (based on EU standards of nitrates and pesticides and on threshold values established by Member States).

The Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances has provided a groundwater protection framework before the Directive 2006/118/EC. It required to prevent the (direct or indirect) introduction of high priority pollutants into groundwater and to limit the introduction into groundwater of other pollutants so as to avoid pollution of groundwater by these substances. This directive will be repealed in 2013.

Annexes I and II of the Groundwater Directive 2006/118/EC are under review.

Other related directives

Pieces of legislation designed to protect groundwater against pollution and deterioration are part of a larger regulatory framework that can be traced back to the 1990s. The concept of groundwater protection is now fully integrated into the basic measures of the Water Framework Directive.



source: http://ec.europa.eu/environment/water/water-framework/images/policy_integration.jpg

ANNEX 7 – Detailed provisions related to the programme of measures (WFD Annex VI)

ANNEX VI

LISTS OF MEASURES TO BE INCLUDED WITHIN THE PROGRAMMES OF MEASURES

PART A

Measures required under the following Directives:

- (i) The Bathing Water Directive (76/160/EEC);
- (ii) The Birds Directive (79/409/EEC) (1);
- (iii) The Drinking Water Directive (80/778/EEC) as amended by Directive (98/83/EC);
- (iv) The Major Accidents (Seveso) Directive (96/82/EC) (2);
- (v) The Environmental Impact Assessment Directive (85/337/EEC) (3);
- (vi) The Sewage Sludge Directive (86/278/EEC) (4);
- (vii) The Urban Waste-water Treatment Directive (91/271/EEC);
- (viii) The Plant Protection Products Directive (91/414/EEC);
- (ix) The Nitrates Directive (91/676/EEC);
- (x) The Habitats Directive (92/43/EEC) (5);
- (xi) The Integrated Pollution Prevention Control Directive (96/61/EC).

PART B

The following is a non-exclusive list of supplementary measures which Member States within each river basin district may choose to adopt as part of the programme of measures required under Article 11(4):

- (i) legislative instruments
- (ii) administrative instruments
- (iii) economic or fiscal instruments
- (iv) negotiated environmental agreements
- (v) emission controls
- (vi) codes of good practice
- (vii) recreation and restoration of wetlands areas
- (viii) abstraction controls
- (ix) demand management measures, inter alia, promotion of adapted agricultural production such as low water requiring crops in areas affected by drought
- (x) efficiency and reuse measures, inter alia, promotion of water-efficient technologies in industry and water-saving irrigation techniques
- (xi) construction projects
- (xii) desalination plants
- (xiii) rehabilitation projects
- (xiv) artificial recharge of aquifers
- (xv) educational projects
- (xvi) research, development and demonstration projects
- (xvii) other relevant measures

ANNEX 8 – Detailed provisions related to the River Basin Management Plans (WFD Annex VII)

ANNEX VII RIVER BASIN MANAGEMENT PLANS

A. River basin management plans shall cover the following elements:

1. a general description of the characteristics of the river basin district required under Article 5 and Annex II. This shall include:

1.1. for surface waters:

- . mapping of the location and boundaries of water bodies,
- . mapping of the ecoregions and surface water body types within the river basin,
- . identification of reference conditions for the surface water body types;

1.2. for groundwaters:

- . mapping of the location and boundaries of groundwater bodies;

2. a summary of significant pressures and impact of human activity on the status of surface water and groundwater, including:

- . estimation of point source pollution,
- . estimation of diffuse source pollution, including a summary of land use,
- . estimation of pressures on the quantitative status of water including abstractions,
- . analysis of other impacts of human activity on the status of water;

3. identification and mapping of protected areas as required by Article 6 and Annex IV;

4. a map of the monitoring networks established for the purposes of Article 8 and Annex V, and a presentation in map form of the results of the monitoring programmes carried out under those provisions for the status of:

- 4.1. surface water (ecological and chemical);
- 4.2. groundwater (chemical and quantitative);
- 4.3. protected areas;

5. a list of the environmental objectives established under Article 4 for surface waters, groundwaters and protected areas, including in particular identification of instances where use has been made of Article 4(4), (5), (6) and (7), and the associated information required under that Article;

6. a summary of the economic analysis of water use as required by Article 5 and Annex III;

7. a summary of the programme or programmes of measures adopted under Article 11, including the ways in which the objectives established under Article 4 are thereby to be achieved;

- 7.1. a summary of the measures required to implement Community legislation for the protection of water;
- 7.2. a report on the practical steps and measures taken to apply the principle of recovery of the costs of water use in accordance with Article 9;
- 7.3. a summary of the measures taken to meet the requirements of Article 7;
- 7.4. a summary of the controls on abstraction and impoundment of water, including reference to the registers and identifications of the cases where exemptions have been made under Article 11(3)(e);
- 7.5. a summary of the controls adopted for point source discharges and other activities with an impact on the status of water in accordance with the provisions of Article 11(3)(g) and 11(3)(i);
- 7.6. an identification of the cases where direct discharges to groundwater have been authorised in accordance with the provisions of Article 11(3)(j);
- 7.7. a summary of the measures taken in accordance with Article 16 on priority substances;
- 7.8. a summary of the measures taken to prevent or reduce the impact of accidental pollution incidents;
- 7.9. a summary of the measures taken under Article 11(5) for bodies of water which are unlikely to achieve the objectives set out under Article 4;
- 7.10. details of the supplementary measures identified as necessary in order to meet the environmental objectives established;
- 7.11. details of the measures taken to avoid increase in pollution of marine waters in accordance with Article 11(6);

8. a register of any more detailed programmes and management plans for the river basin district dealing with

ANNEXES

particular sub-basins, sectors, issues or water types, together with a summary of their contents;

9. a summary of the public information and consultation measures taken, their results and the changes to the plan made as a consequence;

10. a list of competent authorities in accordance with Annex I;

11. the contact points and procedures for obtaining the background documentation and information referred to in Article 14(1), and in particular details of the control measures adopted in accordance with Article 11(3)(g) and 11(3)(i) and of the actual monitoring data gathered in accordance with Article 8 and Annex V.

B. The first update of the river basin management plan and all subsequent updates shall also include:

1. a summary of any changes or updates since the publication of the previous version of the river basin management plan, including a summary of the reviews to be carried out under Article 4(4), (5), (6) and (7);

2. an assessment of the progress made towards the achievement of the environmental objectives, including presentation of the monitoring results for the period of the previous plan in map form, and an explanation for any environmental objectives which have not been reached;

3. a summary of, and an explanation for, any measures foreseen in the earlier version of the river basin management plan which have not been undertaken;

4. a summary of any additional interim measures adopted under Article 11(5) since the publication of the previous version of the river basin management plan.

