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1 Introduction

The current state of the institutional setting in the water sector and the ensuing capacity and likelihood of it being in a condition to deliver a good implementation of the tasks, which it is entrusted, is a function of two main factors:

- The legislation which construes the sector
- The established regulatory and administrative practices in the field.

2 The legal framework

2.1 Historical development

China's history in the area of water regulation and legislation is long and rich¹. For our purposes however, it may suffice to focus the attention on the major legal shift introduced by the 2002 Water Law². This was not the first law dedicated to water matters. On the contrary, it repealed and substantially modernised its predecessor, the first comprehensive water law in modern China, which had been adopted at the 24th meeting of the Standing Committee of the 6th National People's Congress on 21 January 1988 and became effective on 01 July 1988.

The 2002 Water Law is supplemented by more than 2 dozens of State Council Decrees and Regulations related to water matters and more than 5 dozens of Ministerial/Inter-ministerial regulations, directives and stipulations, as well as several hundreds of Provincial regulations on water, related resources and the environment. Approximately a dozen agreements and international conventions are also of relevance.

Moreover, there is an array of other laws of high relevance in the regulation of China's water sector, namely the 1989 Environmental Protection Law, the 2010 Water and Soil Conservation Law superseding the 1991 one, the 1996 Water Pollution Control Law as well as the 1997 Flood Control Law, and the 1998 Forest and Land Administration Laws.

These laws have, since 1999, been profoundly affected, as to their interpretation and implementation by government agencies at all levels by the amendment of Art. 5 of the Constitution of the People's Republic of China (PRC), which adopts the "rule of Law" principle. This amendment places an unprecedented high standard of accountability on the legislative, administrative and judicial branches.

The 2002 Water Law as well as the aforementioned accompanying laws have produced a number of substantive shifts in the way Chinese waters are managed: For instance, they have led to a more marked focus on controlling floods and droughts at the basin level – and the corresponding devolution of authority from the central to the lower levels, even county levels. Another prominent feature of this new legal approach is the bigger reliance of management on intense planning.

In the more directly institutional area, these laws seem to have contributed to a clarification of the actors involved and their competences and tasks. It appears that in the whole this picture remains untouched by the 2011 No.1 Document on Accelerating Water Conservancy Reform and Development

¹ Dante Caponera, 2003. *Principles of water law and administration*, 2nd ed., 2003, pp. 18, ff.

² *Idem*, pp. 101, ff..

(No.1 Document), irrespective of the fact that this document brings in many deep and substantive innovations, new directions in water management. This enhanced clarity of the institutional setting in the Chinese water sector does not hinder that it is still characterised by a remarkable complexity. This is detectable already at the State level, but it is equally noticeable at the other relevant levels. Such institutional complexity, by itself, is undoubtedly a powerfully complicating factor in the process of implementation of water laws and policies.

2.2 Institutional architecture

The various water and water-related laws are implemented by not less than **9** key ministries and corresponding bureaux at the provincial through to county levels, besides basin or lake water resources commissions. One of the major difficulties is that several of these actors play a role at different levels, from the national through to the local ones.

These entities include the following:

- Ministry of Water Resources (MWR)
- Ministry of Environmental Protection (MEP) (previously the State Environmental Protection Agency)
- Ministry of Agriculture (MoA)
- State Forestry Administration (SFA)
- Ministry of Land and Resources (MLR)
- Ministry of Housing and Urban & Rural Development (MoHURD)
- Ministry of Finance (MoF)
- National Development and Reform Commission (NDRC).

2.2.1 Ministry of Water Resources

As the more functionally oriented entity in water matters, the Ministry of Water Resources, is the most important party for water resources management, water supply, and flood control works. The Ministry is responsible for drafting of legislation, supervising law enforcement (especially that relating to the Water Law, the Flood Control Law, the Water and Soil Conservation Law), unified management of water resources, development and formulation of mid- to long-term policies and plans, organizing water withdrawal permits and fee collection systems, construction of water and soil conservation structures, multipurpose projects, structural or non-structural flood control measures and rural water development (including irrigation and drainage), and review of proposals and feasibility studies for large and medium sized water projects. It is equally responsible for national flood control and drought relief. In 1998, the Ministry of Water Resources also gained responsibilities for groundwater administration including urban and coastal groundwater management and protection, and city flood control.

The responsibilities of the Provincial Water Resources Departments are consistent with the responsibilities of the MWR, as their detailed responsibilities are set up by each of their provincial governments. The MWR gives instructions for professional operation and implementation of laws to Water Resources Departments in each of the provinces, but these departments report administratively to the provincial governments. The 2002 Water Law has been very specific in identifying the MWR as the primary and support agency to implement the Water Law. It may be said that Article 44 of the 2002 Water Law encapsulates the role of the Ministry of Water Resources, in particular when it charges it with the responsibility of macro-management of the nation's water resources.

2.2.2 Other relevant ministries

The **Ministry of Environmental Protection** is responsible for national environmental planning and protection, setting standards, and takes the lead role in water pollution control for important river basins. It is also charged with supervising and monitoring all kinds of environment at national level, such as the environment of wetland, water, air, etc. The Ministry of Environmental Protection is the implementing authority for the Convention on Biological Diversity in China. It also manages wetland and other nature reserves and is designated as the national nature reserve authority under the Regulations on Nature Reserves of 1994.

The **Ministry of Agriculture** is responsible for review of agricultural land-use plans and conservation management of aquatic organisms. In this role the Ministry of Agriculture manages natural and domestic fish populations, by regulating fishing seasons, methods, and catch limits. The Ministry of Agriculture also manages grasslands, many of which lie in the catchments of important wetlands. The State Council Office for Fighting Poverty through Development, also under the Ministry of Agriculture, is responsible for making policies and plans on poverty alleviation and development.

The **State Forestry Administration** implements the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (the Ramsar Convention) in China. The State Forestry Administration is also charged with organizing and implementing wetlands conservation, and took the lead role in drafting China's National Wetland Conservation Plan issued in 2000, and in implementing the plan and managing wetland nature reserves. The State Forestry Administration is also responsible for forest management and conservation, both of which play important roles in the protection of water sources. In that capacity the State Forestry Administration regulates forest harvesting and manages forest nature reserves. Wildlife protection in China is the responsibility of the State Forestry Administration, with the exception of aquatic organisms, which are the responsibility of the Ministry of Agriculture.

The **Ministry of Land and Resources** is in charge of planning, managing, protecting and rational utilization of the land, mineral and marine resources. In that capacity the Ministry of Land and Resources is responsible for developing and implementing regulations for the assignment, lease, evaluation, transfer, transaction and governmental purchasing of allocation of the right to the use of land, working out a catalogue guide for the allocation of the land-use right for state-owned land and measures concerning the land used by villages and townships, and administering the transfer of rights to use non-agricultural land owned by rural collectives. Therefore, land acquisition in large projects must be approved by the Ministry of Land and Resources. This role is important for the No.1 Document, which relies on revenue from rural-to-urban land transactions as an important source of

finance. Up to 1998 the Ministry of Land and Resources was responsible for management of groundwater, as an underground resource, and it still maintains a substantial capacity in groundwater survey and resource assessment.

The **Ministry of Housing and Urban and Rural Development** and its affiliates are responsible for policies on construction and administration of urban domestic water supply systems, the sewer system and the wastewater treatment plants. It is also responsible for the formulation of regulations and financing of municipal water supply and sewage management, under the environmental standards set by Ministry of Environmental Protection and the local environmental authorities. Management of the municipal sewage system is the responsibility of the Ministry of Housing and Urban and Rural Development and the local Public Utilities Offices under provincial of Housing and Urban and Rural Development (Construction) Committees. Municipal wastewater treatment plants with daily treatment capacity above 100,000 m³/day are mostly controlled by the Ministry of Housing and Urban and Rural Development, whereas those below this capacity are mostly controlled by provincial Construction Committees or urban Bureaus of Housing and Urban and Rural Development.

The **Ministry of Finance** is responsible for central level financing, repaying loans, and fiscal supervision. This includes the water pollution levies set by Water Resources Protection Bureaus under the joint supervision of the Ministry of Water Resources and the Ministry of Environmental Protection. It also assumes the role of negotiating with international funding agencies.

The **Ministry of Health** is responsible for drinking water quality indirectly affecting the water quality objectives for the sources of drinking water and the performance criteria of water supply companies.

The **National Development and Reform Commission** is mainly responsible for coordination among ministries and commissions, drafting long-term national social and economical strategy, coordinating over macro-economical and social developments between various sectors, and reviewing and guiding various sector planning. The National Development and Reform Commission has direct responsibility for the review and approval of investment programmes and projects. All proposed water projects must be approved by the National Development and Reform Commission and could then be included in a Five Year Plan and annual investment budget. Provincial planning commissions are to assume similar responsibilities as the National Development and Reform Commission: firstly to review and approve programmes and projects, and secondly to play a more important role in resolving coordination difficulties.

2.3 Broad assessment of the institutional architecture derived from the Chinese laws

While the aforementioned laws provide a rather explicit picture at least of core functions, tasks and competencies among ministries, it is striking that few legal provisions concern the multi-level governance of water matters and that the provisions on the coordination and cooperation among the different bodies also are scarce. This is the more relevant as the regime set by the 2002 Water Law is supposed to be very dynamic in its orientation. The planning of water resources usage in particular is bound to provide many instances of potential coordination difficulties or conflicts among the different actors identified. Indeed, one can not but be struck by the large number of plans for water management required by the 2002 Water Law.

These plans required by the Water Law include:

- Master Plans/ Regional plans (Art. 14, 15 of the Water Law)
- Comprehensive plans (Art. 14, 15)
- Special plans (flood prevention, water logging, irrigation, water supply etc..) (Art. 14, 15)
- Water Resource Development and Utilization plans (Art. 30)
- Water Functional Division plans (zoning) (Art. 32)
- Mid-and-long-term water supply and demand master plans (Art. 44)
- Water Allocation plans (long term (Art. 45)) - (annual (Art. 46 and 47))
- Drought Management plans (Contingency plans) (Art. 45)
- Water Use Plans (Art. 47)
- Water Saving Plans (Art. 53).

Other relevant plans relating to Water Resources Departments are:

- Conservation of Water and Soil plans - (Water & Soil Conservation Law: Art. 7)
- Flood Control plans – (Flood Control Law: Chapter II)
- Water Environment Functional Zoning – (Water Pollution Law)
- Water Pollution Prevention and Control plans – (Water Pollution Law: Art. 10)
- Agriculture/Irrigation plans
- Land Use plans
- Urban Development plans.

A potentially very relevant exception to the legal shortcomings formerly denoted lies in Article 32 of the 2002 Water Law, which requires the preparation of “functional division plans” at the major and other basin levels and at various administrative levels. These plans which may also be described as interagency agreements of operation have the potential for ensuring the much needed interagency communication and cooperation at different administrative, institutional levels, which are envisaged in the marked integrated water resources management approach in the ambitious water-related legislation and even more forcefully in the No.1 Document.

3 Administrative practice

The actual contours of the institutional setting in the water sector and the ensuing likelihood of it delivering the expected outputs depend critically on the actual administrative practice, the resulting administrative culture, the balances that the different empowered entities manage to strike among themselves in pursuing the tasks they are entrusted by the law.

A word of caution should be registered regarding the generality and relevance of information relating to perceived deadlocks or shortcomings in both the empowerments produced by the laws and the institutional balance struck in the course of implementation of the water legislation. How far may these perceptions be taken for genuine and representative of the spectrum of problems to be addressed?

3.1 A number of limiting features of the Chinese water sector administration

With these reservations in mind, it may be said that the interviews with other expert Colleagues in DRC and the literature review undertaken have nonetheless permitted to detect a number of what appear to be important features of the Chinese administration in the water sector, or related to the water legislation, which are likely to have an adverse impact on implementation of the water or water related legislation and the No.1 Document.

Among such features, the following seem to deserve highlight:

- substantially, the water sector seems to be more keen on water allocation and water quantity issues among the whole range of water issues currently included in an integrated water resources approach
- these issues occupy substantial resources of the administration in both planning and the actual implementation of the plans
- as much as the 2002 Water Law is evidence of a distinct orientation towards devolving administrative authority in most aspects of water management to non-central, local entities and in particular the river basin authorities, the latter are rather weak for delivering the expected results
- this overall weakness of the non-central, decentralised and river basin specific authorities has to do with an array of factors, ranging from the formal legal powers to their human resources. Indeed, the laws not usually provide only generalities in empowering such entities and no evidence has been found of other implementing legal documents specifying the authority for such entities to intervene, namely with a prominent coordinating role, for instance at the planning stage

- another source of imbalance is the relation of central and river basin authorities with the provincial authorities, which in some cases are deemed to be disproportionately ‘strong’ in the bargaining process, in particular, for the definition of water quotas or allocations, again mainly in the planning stage
- there are also perceived grey zones in the law, such as the relation among the multitude of different plans (of both different scope and nature), with a resulting widespread sense of uncertainty on the part of those entities, which are supposed to participate in their preparation, adoption and implementation
- insufficient correlation between the water resources planning and permitting system as well as the weak monitoring generally in place, and the corresponding authorities

Overall there is a global image projected of an insufficient coordination, of an insufficient cooperative culture among the different centres of administrative power. In fact, every entity tends to be zealous of its own competences and powers, but reluctant to engage in a constructive dialogue, both horizontally and vertically, with other parties in the water sector and sharing the information and data for such exercises to be meaningful.

4 The European Union experience as a source of inspiration for dealing with the institutional shortcomings?

4.1 Overview of the European Union “parallel” historical reality and dealing with the issue

The short-comings of Chinese water legislation, both general and specific, can also be found both in the history of the water sector legislation in Europe and in the current state of affairs in several Member States of the European Union (EU).

The instilling of a positive cooperative culture among the entities participating in the water management is a continuing daily battle, which often has required many counter-intuitive and counter-punctual efforts of such entities. In fact, the development of EU water law, particularly the one in the latest years associated with the EU Water Framework Directive (WFD), can be described precisely as an attempt at countering these trends for working alone at each administrative water structure, either at the EU or at national level,. The attempt is made at countering the temptation of the individual entities to consider their area of action as their own domain, a kind of fiefdom, so as to ensure the efficiency and implementation of the water management program of the EU.

In Europe this trend towards the different parties in the water sector countering temptations of isolation or actual institutional isolation and instead learning to support each other as well as working together on a shared program of integrated water resources management, has been developed in two main moments, which may be worth recalling:

- Institutionally, most but not all of the entities in the Member States related to the water sector and supposed to contribute to the actions and decision-making in the sector have during the 1980s and 1990s become parties under the umbrella of a common ministry of the environment as part of a historical evolution towards increasing concerns for the environment³. An important exception, of potential relevance to China, is the Dutch water administration, which, nonetheless, in many ways is regarded as an undisputable case of best practices.
- Operationally, as a recognition of the difficulties entailed by the ambitious character of the WFD management program, the Member State Water Directors, together with the European Commission, decided in 2001 to set up the Common Implementation Strategy as cooperation mechanism to ensure uniform implementation of the WFD. Indeed, if there are striking differences

³ Astrid Epiney, *Umweltrecht in der Europäischen Union. Primärrechtliche Grundlagen, Gemeinschaftliches Sekundärrecht*, 2nd. Ed., 2005, Köln, pp. 11-17.

between the institutional and the substance of the legal settings of the EU and China, there are equally important parallels, which advocate consideration of the EU experience as a possible inspiration overcome the shared problem of efficient, integrated water management. In the EU the Common Implementation Strategy mechanism for the WFD was later on extended to the implementation of the Floods Risk Management Directive.

4.2 Opportunity for a comparative exercise – differences and similarities between the Chinese and European Union settings

These differences, firstly, have to do with the fact that the Chinese program of both its laws and the No.1 Document affecting the institutional setting has not benefited from the continuous refinement, which has taken place in the European context. It is this pathway of a long trial and error learning process, which has permitted the EU, after two waves of legislation at the European level^{4,5,6,7,8,9}, to reach a more distinctly unified and integrated policy of coherent water management. This was consolidated in the WFD in a clearly recognizable chain of obligations corresponding to different building blocks, but also constituting ‘logical’, successive steps of a coherent water management policy. Moreover, these obligations are not only clear as to the core of what is involved, they are equally attached to a very clear time schedule. This is a major development with far-reaching consequences at the level of policy implementation, mainly because it constrains the possible ‘bargaining temptations’ of the Member States, at the crucial level of the implementation, an area where, it is important to recall, according to the primary law Treaties of the European Union, hold the exclusive legal competence. Additionally, such obligations are also extensively detailed in annexes to the WFD, which ‘protocolise’ the specific information that must be made available, etc.

Second, the differences more directly related with the institutional issues have to do with the fact that in the European Union, there is a supranational entity ‘capping’ the Member States, which themselves are sovereign. And, of course, the fact that the relations among the Member States and the European Union institutions have been codified in laws, which may be enforced under a very active and strong judicial system. On the other hand, if it is true that in devolving most of the actions of the substantive program of the WFD to the river basin authorities, the Member States and the European Union have potentially undertaken a very ‘revolutionary’ move in the way water management was traditionally

⁴ Paulo Canelas de Castro, 2006. “Cambiamento dei paradigmi nella legislazione internazionale e europea a tutela delle acque”, *Rivista Giuridica dell’ Ambiente*, 2006 (6), pp. 829-853

⁵ Jochen Hentschel, 2005. *Die europäische Wasserrahmenrichtlinie. Nationale Umsetzungsverpflichtung von Bewirtschaftungsplänen und Massnahmenprogrammen*, Hamburg, 2005, pp. 35-36

⁶ Goëtz Reichert, 2005. “Chapter 11 – The European Community’s Water Framework Directive: A Regional Approach to the Protection and management of Transboundary Freshwater Resources?”, in L. Boisson de Chazournes and S.M.A. Salman, *Water Resources and International Law* (eds.), Leiden, 2005, pp. 432-436

⁷ Paulo Canelas de Castro, 2009. “ Chapter 14 – European Community Water Law” , in Joseph Dellapenna and Joyeeta Gupta (eds.), *The Evolution of the Law and and Politics of Water* , Springer, 2009, pp. 230

⁸ Paulo Canelas de Castro, 2009 “ Paradigm Shifts in European Union Water Policy”, in Paulo Canelas de Castro (ed.), *The European Union at 50: Assessing the Past, Looking Ahead*, Macau, 2009, p. 196

⁹ Paulo Canelas de Castro, 2011. “From a Common Concept to a Common Experimentation: An Assessment of the Water Framework Directive’s Impact on Water Management in Europe”, in Slavko Bogdanovic (ed.), *Water Policy and Law in the Mediterranean. An Evolving Nexus*, Novi Sad, 2011, pp. 152-153.

institutionally conceived, this came as a culmination of a very protracted experience and negotiated consensus. It relied, moreover, precisely on a matching important devolution of codified powers to these authorities, which lent them and their potential efficiency high credibility and capacity to intervene. One may think, for instance, of the whole procedures that the WFD sets up in preparation to the actual establishment or identification of these authorities, how this is the object of reporting and analysis jointly undertaken by all the major EU and member state actors.

These major differences notwithstanding, there are equally important similarities, which seem to recommend a close look at the experience of the EU.

Substantively, the most important one is the apprehension of the need to address water issues along the broad integrated water resources management formula and find practical ways of making this 'philosophy' operational. In the Consultant's view, this need has not been adequately incorporated into the No.1 Document, but the orientation is there, being one of the reasons to review the potential application of WFD experience in the implementation of the No.1 Document.

Institutionally, even if the different levels of administrative action may not be equated (a state is not a province, and an integration organisation is not a state), there are nonetheless similarities in terms of the structural problems deriving from the need to have all these interact, play together and cooperate. As there is, in the Chinese later legislation and policy, irrespective of its possibly still very frail formulation (also for the lack of means at the disposal of river basin authorities or ways of overcoming them by, for instance, raising charges, fees of different kind) similar pull towards accrediting the river basin authorities as the ideal framework for resolving some of the difficulties in coordinating the different stakeholders as well as the levels at which they are sensed to operate. Not less important is the fact that the Chinese institutional setting calls for a multi-level approach, irrespective of the particular identity and even nature of its components, which is a structural problem the EU has been endeavouring to solve.

4.3 The building blocks of the EU legislative framework

In another writing¹⁰ we endeavoured to summarise the fundamental shift in the way water management is conceived in the following manner: "This shift may be analytically taken as resting on ten main innovative pillars that together build an impressive body of European freshwater law, whose principles may also influence and support the implementation of the specific European Community secondary water law. As the WFD reinforces, lends coherence and, not least, 'teeth' (through its more effective legal mechanisms and institutions) to this (...) legal construction".

4.3.1 The holistic treatment of all management problems

The newer water policy attempts to deal with the complex nature of the multiple problems requiring management and attention over time. Formerly management of waters was confined to some particular issues, with water quality prevailing. With the WFD, management becomes much more comprehensive, henceforth embracing both quality and quantity issues (Preamble (19), (23), Art. 1). It

¹⁰ Paulo Canelas de Castro, 2011. "From a Common Concept to a Common Experimentation: An Assessment of the WFD's Impact on Water Management in Europe", in Slavko Bogdanovic (ed.), *Water Policy and Law in the Mediterranean. An Evolving Nexus*, Novi Sad, 2011, pp. 153-161.

equally starts to include provisions related to extreme events, be they accidents, droughts or floods (Preamble (32), (39), Arts. 1(E), 4(6)). The economic implications of human actions on water are equally considered (Arts. 5, 9) with the contribution of the public (Art. 14). This newer policy is based on knowledge and scientific research, data collection, monitoring (Preamble (12), (49), Arts. 8, 11(5), 16(2), (5), 18, 20).

4.3.2 Integration of the actual complexity of reality/nature

With the neutral, objective, 'natural' notion of river basin (Arts. 2(13), (15); also International Law Association's Berlin Rules, 2004, Art. 5), all waters are considered, be they surface, ground, transitional, or coastal and marine waters (Arts. 1(1), (2), (6), (7)), as well as their ecosystem relations and those with wetlands (Art. 1a).

4.3.3 (Integrated) river basin management

Water management is referred to the river basin, which works as a geographical management unit (Art. 3(1)), corresponding to the real occurring problems and the more environmental friendly solutions and importing the corresponding set up of the competent authorities. With this structural choice, Community water law and management becomes oriented by ecological criteria (Art. 3(2), 3(3)), instead of relying, as happened in the past, on administrative or political factors, artificial criteria that frequently led to ineffective water management solutions.

4.3.4 Pollution control

Pollution control and other water protection activities are functionally oriented to the 'environmental objectives' and in particular the general target of attaining 'good water status' (Arts. 1, 2(18), (20), 4(1)(ii), (2)(ii)), which is ecologically defined and ambitious, ideally in 2015, and exceptionally in 2021 or 2027. Derogations for extension, however are narrowly defined and subject to stringent and increasingly rigorous conditions to be set out in river basin management plans and programmes of measures (Arts. 4(4) to 7).

The central notion of 'good status' entails a number of objectives protecting the quality of water. The key ones at the European level are the general protection of the aquatic ecology, the specific protection of unique and valuable habitats, the protection of drinking water resources, and the protection of bathing water. All these objectives must be integrated in each river basin. The last three - special habitats, drinking water, and bathing water - apply only to specific bodies of water, i.e. those supporting special wetlands; those identified for drinking water abstraction; and those generally used for bathing. In contrast, ecological protection should apply to all waters: the central requirement of the Treaty is that the environment be protected at a high level and in its entirety. For surface water, 'good water status' is a function of both ecological integrity and chemical quality. Hence, a general requirement for ecological protection and a minimum chemical standard, were introduced to cover all surface waters, depending on two further standards: 'good ecological status' and 'good chemical status'.

'Good ecological status' is defined in Annex V of the Directive, in terms of the quality of the biological community, the hydrological characteristics and the chemical characteristics. As no absolute standards for biological quality can be set across the European Community, because of ecological variability, the controls are specified as allowing only a slight departure from the biological community

that would be expected in conditions of minimal human impact. A set of procedures to identify that point for a given body of water, and establishing particular chemical or hydromorphological standards to achieve it, is provided, together with a system for ensuring that each Member State interprets the procedure in a consistent way (to ensure comparability). The system is somewhat complicated, but this is inevitable given the degree of ecological variability, and the large number of parameters, which must be dealt with.

Chemical protection is defined in terms of compliance with all the quality standards established for chemical substances at EU level. The WFD also provides a mechanism for reviewing these standards and establishing new ones by means of a prioritization mechanism for hazardous chemicals. This will ensure at least a minimum chemical quality, particularly in relation to toxic substances, everywhere in the EU.

The other uses or objectives for which water is protected apply in specific areas. Therefore, the obvious way to incorporate them is to designate specific protection zones within the river basin that must meet these different objectives. The overall set of objectives for the river basin will then require ecological and chemical protection everywhere as a minimum, but where more stringent requirements are needed for particular uses, zones will be established and higher objectives assigned to them.

One category of uses does not fit this picture. This is the set of uses that adversely affect the status of water, but are considered essential on their own right. They are overriding policy objectives. The key examples are flood protection (Art. 1(e)) and essential drinking water supply (Art. 7). The problem is dealt with by providing derogations from the requirement to achieve good status for these cases, as long as all appropriate mitigation measures are taken (Art. 4(4), (6)). Less clear-cut cases are navigation and power generation, where the activity is open to alternatives, transport for instance can be switched to land and other means of power generation can be used. Derogations are provided for those cases also, but subject to three tests: 1) that the alternatives are technically impossible, 2) that they are disproportionately expensive, or 3) that they produce a worse overall environmental impact (Art. 4(7)).

For groundwater, 'good status' depends on the chemical status and the quantitative abstraction. The case of groundwater is somewhat different than surface waters. The presumption in relation to groundwater is that it should not be polluted at all. For this reason, setting chemical quality standards may not be the best approach, as it gives the impression of a permitted level of pollution which Member States can "fill up". A few such standards have been established at the European level for particular compounds, such as nitrates, pesticides and biocides, and these must always be adhered to. But for general protection, another approach has been taken. It is essentially a precautionary one. It comprises a prohibition on direct discharges to groundwater (Art. 4(b)(i)), and to cover indirect discharges there is a requirement that the status may not deteriorate and that any human induced upward trend in pollution must be reversed (Art. 8(1)). Taken together, these precautions should ensure the protection of groundwater from all pollution, according to the principle of minimum human impact.

Quantity is also a major issue for groundwater. Briefly, the issue can be put as follows. There is only a certain amount of recharge of groundwater each year, and of this recharge, some is needed to support connected ecosystems, whether they are surface water bodies or terrestrial eco-systems such as

wetlands. For good management, only that portion of the overall recharge not needed by the ecology can be abstracted - this is the sustainable resource, and the WFD and Groundwater Directive limits abstraction to that quantity. One of the innovations of the WFD is its provision of a framework for integrated management of groundwater and surface water for the first time at the European level.

4.3.5 A combined approach

If dramatic results are to be obtained in the control of pollution, the whole repertoire of instruments must be jointly used. There is no more room left for the traditional fragmented approach of resorting either to emission limit values or to quality objectives, but instead a combined approach (Art. 10) becomes mandatory.

4.3.6 Planning

Planning plays a crucial role in the pursuance of the new policy¹¹. The river basin management plan (Art. 13) is a detailed plan how to reach the objectives set for the river basin (ecological status, quantitative status, chemical status, and protected area objectives) within the required timescale. The management plan must set out all the elements of the performed analysis, including the river basin characteristics, a review of the impact of human activity, estimation of the effect of existing legislation and measures, the 'gap' to meet these objectives and a set of measures designed to fill the gap (Art. 5).

The plan must include an economic analysis of water uses within the river basin to enable rational discussion of the cost-effectiveness and affordability of the various possible measures. Behind this concept, there is a more modest understanding of the capacities of the Member States, and on the other hand, acknowledgement of a need to capture the knowledge of a much wider universe of stakeholders and general information about the river related situations. There is also understanding of the cyclical nature of such endeavours or needs (Art. 13(7)). Effective water policy and management aimed at obtaining good status for European water bodies demands many contributions to devise the right route. For that, large participation of the public and stakeholders is required (Art. 14).

4.3.7 Cost recovery

Europe has a long history of user payments for water and wastewater services by both households and industry, while other big consumers or polluters of water, like agriculture, energy production (cooling water or hydropower), business (flood control), and navigation (river deepening and straightening) rarely paid the full cost of those services, let alone their damage to the environment. To counter this and the fact that the principle of charging for the water services is not uniformly practiced throughout Europe, the WFD foresees that use of water is to be priced and the prices have to be sound, corresponding to the true costs of the services provided (Art. 9; Annex III). One senses that this shall open the door, without declaring so, to other solutions in terms of management of the traditional natural monopoly of water, for instance liberalization, privatization, and public-private partnerships.

The market and market incentives have to be mobilized to work for the protection of the aquatic environment; adequate water pricing is expected to act as an incentive for the sustainable use of water

¹¹ M. Eil, 2003. Wasserrechtliche Planung. Die Rechtliche und organisatorische Umsetzung der EG-Wasserrahmenrichtlinie; Baden-Baden, 2003, Nomos.

resources and thus as decisive help to achieve the environmental objectives under the WFD. It is, however, less clear how this demanding innovative policy shall be harmonized with the guideline that *'Member States may in so doing have regard to the social, ... and economic effects of the cost recovery ...'* (Art. 9(1)) as well as with the implication of the opening statement of the WFD Preamble, which proclaims that 'Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such'.

4.3.8 Public participation

In the attempts clean up European waters, the role of citizens and citizens' groups is deemed of a crucial importance. There are four main reasons for the emphasis on public participation.

The first is that the (hard) decisions on the most appropriate measures to achieve the objectives in the river basin management plan will involve balancing the interests of stakeholders over time. The economic analysis requirement is intended to provide a rational basis for these decisions, but it is essential that the process is open to the scrutiny of those who will be affected.

The second reason concerns enforcement. The greater the transparency in the establishment of objectives, the imposition of measures, and the reporting of standards, the greater the care Member States will take to implement the legislation in good faith, and the greater the powers of the citizens to influence the direction of environmental protection, whether through consultation or, if disagreement persists, through the complaints procedures and the courts.

The third is transparency and exchange of environmental information. Caring for Europe's waters will require more involvement of citizens, interested parties, non-governmental organizations. To that end, the WFD includes institutionalised consultation of the public¹, when river basin management plans are established. The river basin management plan must be issued in draft, and the background documentation on which the decisions are based must be made accessible (Art. 14(1)). Too often in the past, monitoring of progress has not taken place until it was too late - until Member States were already woefully behind schedule and out of compliance. The WFD, by establishing very early on a network for the exchange of information and experience between water professionals throughout the Community seeks to ensure that this does not happen.

The fourth reason partially related to the former one, is knowledge, or more precisely, lack of knowledge. The new European policy acknowledges information knowledge gaps and tries to overcome them, not least by widely enlarging the basis of knowledge sources, in particular the scientific communities. These solutions are in line and anticipate the legal empowerments foreseen by the UNECE Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (1998).

Altogether, effectiveness and legitimacy are two powerful drivers of this newer construction, one of more human face, one of a less technocratic nature.

4.3.9 Simplicity

The WFD will streamline and rationalize the EU water legislation by integrating previous sector or issue oriented directives into the WFD, such as the directive on freshwater quality or the one on hazardous substances discharges and also after an appropriate time repealing them.

Furthermore, and this owes to its framework character, the WFD aims at becoming an umbrella for all water-related European legislation, namely, the new legislation in the fields of flood risk management and priority hazardous substances.

4.3.10 Internationalization

Most European rivers and lakes are shared internationally. Sometimes they are shared with countries outside the EU. It is therefore equally crucial that the programme of the WFD promotes cooperation and coordination among the main actors involved in this international scene to ensure the application of the substantive regime. This requires the establishment of international river basin districts, ensuring the appropriate administrative arrangements and assigning those basin districts to competent authorities (Art.3(3), (4)) as well as, if possible, adopting joint river basin plans (Art.13(2)) or coordinated programmes of measures (Art. 3(4)). But this is reflected equally in the attention to take into account international experiences of value, namely those of some international river basin commissions, like the International Commission for Protection of the Danube River, which the European Commission was advised (by Art. 3(4)) to look at, and indeed has been following.

4.4 Two main solutions to look at in the European Union's experience

The aforementioned effort at fostering an administrative culture of cooperation and joint work by every relevant stakeholder has been pursued in the EU by not only insisting on the coordination and cooperation obligations of the different relevant actors in its “hard” legislation (in particular, in Article 3 of the WFD, which explicitly calls for such coordination and cooperation), but equally or more extensively and certainly also more innovatively through devising the Common Implementation Strategy.

4.4.1 The legal (“hard law”) strategy

One of the strategies of the European Union for dealing with the need for cooperation of relevant authorities was the formal, legal, hard law one, consisting in particular in the enactment of clear obligations of cooperation.

Article 3 of the WFD is, in this regard, the most relevant provision. It requires the establishment of international river basin districts, and the assignment of responsibility for their governance to competent authorities (Art.3(3), (4)) as well as the adoption of appropriate tools for the proper management of the river basins (for instance, the adoption of joint river basin plans (Art.13(2)) or coordinated programmes of measures (Art. 3(4)), including basin states that are not Members of the EU (Arts. 3(5), 13(3)).

The need for such provision is related to the fact that most European rivers and lakes are shared internationally. Sometimes they are shared with countries other than Member States of the EU. It is therefore crucial that the normative programme of the WFD promotes cooperation and coordination among the main actors involved in this international scene to ensure the application of the substance of such regime.

This need for a coherent policy in a diversified context made of plural actors of different nature also explains that the WFD is conceived as a normative link with a definite regional outlook in a network of

several other European legal documents in the European setting, such as the UNECE Water Conventions and Protocols (Aarhus Convention 1998; Espoo Convention 1991; Helsinki Convention on Industrial Accidents 1992; Kiev Protocol on Civil Liability 2003; Kiev Protocol on Pollutant Release and Transfer Registers 2003; Kiev Protocol on Strategic Environmental Impact Assessment 2003; London Protocol on Water and Health 1999), particularly the Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1998), as well as several sub-regional model conventions, such as the Danube Convention (1994¹²), the Rhine Convention (1998), and the Luso-Spanish Convention 1998^{13, 14}).

Although this normative solution may not be ‘transferred’ to the Chinese setting without adaptation, it addresses fundamentally similar problems. The potential may be equated/tested if only one reads ‘province’ or other administrative authority instead of ‘member state’.

It may equally call for further legislation addressing the challenges of coordination and cooperation among the multi-level entities empowered for implementing the complex, integrated water resources management approach enshrined in the 2002 Water Law, its complementary legislation and the No.1 Document.

4.4.2 The soft informal cooperative strategy

Possibly even more interestingly, also for the different maturity of the Chinese legal system, are the cooperative solutions of institutional nature/relevance encapsulated under the Common Implementation Strategy experience¹⁵.

The Common Implementation Strategy was adopted by the Member States, Norway and the European Commission only five months after the entry into force of the WFD, basically to address the challenges of implementation in a co-operative and coordinated way.

In essence, the Common Implementation Strategy may be described as a structure devised to ensure a uniform approach and contribution by multiple and multi-layered actors. Centred on the implementation of the WFD, the Common Implementation Strategy is designed as an informal forum for ‘open cooperation’ and information sharing.

¹² Slavko Bogdanovic, 2005. “Legal aspects of transboundary water management in the Danube River”, *Archives Hydrobiology*, 2005, 158: Supp. 1, 59-93.

¹³ Paulo Canelas de Castro, 2003. “New era in Luso-Spanish relations in the management of shared basins? The challenge of sustainability”, in M. Fitzmaurice & M. Szuniewicz (eds.), *Exploitation of Natural Resources in the 21st Century*, London: Kluwer, 2003, pp. 191-234;

¹⁴ Paulo Canelas de Castro, 2006. *Recent Developments in Water Law: Principles and Comparative Cases*. Lisbon, 2005, Luso-American Foundation; “Nova Era nas Relações Luso-Espanholas na Gestão das Bacias Partilhadas? Em busca da Sustentabilidade”, in J.J. Gomes Canotilho (org.), *O regime jurídico internacional dos rios transfronteiriços*, Coimbra: Coimbra Editora, 2006, pp. 75-144.

¹⁵ Bosenius, U. and F. Holzwarth, 2006. “Grundlagen für eine gemeinsame Strategie zur Umsetzung der WRRL in Europa”, in P. Rumm, S. von Keitz, & M. Schmalholz (eds.), *Handbuch der EU-Wasserrahmenrichtlinie. Inhalte, Neuerungen und Anregungen für die nationale Umsetzung* (2nd ed.), Berlin: Erich Schmidt Verlag, pp. 11-25.

This cooperative mode operates through a three-tiered multi-level organisational structure:

- Working groups, charged with technical consultation and conceiving non-binding guidance documents
- A strategic coordination group, chaired by the European Commission along with Member State representatives, responsible for receiving the outputs from working groups and advising the water directors on their application
- The water directors' meetings, twice a year, co-chaired by the European Commission and the Presidency of the European Council (of Ministers) and steering the whole implementation process.

This three-tiered structure has already seen several adaptations in the format and tasks of some of the components, according to the evolving work plans and priorities of the moment, thus expressing the underlying working philosophy as well as the dynamic nature of the process. These modifications have, however, left the basic profile untouched, thus demonstrating a commendable learning capacity. In parallel to this more 'bureaucratic' structure, but also maintaining an interactive dialogue modelled on the Common Implementation Strategy's working groups, there is a multi-stakeholder advisory forum joined by representatives from non-governmental organisations, industry associations, and external experts along with national representatives and the European Commission. They are equally charged with reflecting on the whole implementation endeavour, with a view to new policy development. Some of these forums have been transformed into formal Strategy Working Groups, in an attempt to achieve a better and more effective integration of goals and outcomes.

The way the Common Implementation Strategy operates is based on the recognition that there are many other choices, actions, operations to be further defined to obtain the clarity of the integrated water resources management approach, which the WFD intends to operationalise in a very realistic and complete way. Furthermore, the implementation of the WFD raised a number of shared technical challenges for the Member States, the Commission, the then Candidate and EEA Countries as well as stakeholders and NGOs. In addition, many of the European river basins are international, crossing administrative and territorial borders, which made it crucial to build a common understanding and approach to the successful and effective implementation of the Directive. Even more fundamentally, there was also the recognition that, for all the decades of efforts in the field, the Europeans still lacked important information of many kinds to make critical, rational deliberations in the planning and management of such waters.

The apprehension of these needs explains all the detailed obligations of information collection, which the regime comprehends. It also explains the notion that the information collected at the outset of the implementation process of the WFD has to be complemented by the lessons drawn from the very advancement of the implementation process.

The procedure followed to benefit from the synergies of all the stakeholders typically consists of defining targets to be attained, consistent with the formal obligations of the WFD, but also developing them to reach consensus on some mechanisms and procedures for meeting them, which typically are written into Guidance Documents prepared by working groups headed by different Member States.

This method of compliance monitoring of the implementation of the WFD can thus be taken as more interactive for all relevant players than the environmental monitoring of progress towards the environmental objectives, which is regularly performed by Member States and consolidated by the European Environment Agency. Indeed, it involved an intense process of monitoring of the progress and communication of developments, where again the European Commission plays a pivotal role as the “clearing house”, but which is participated jointly by the member states. These data are thence assessed, in a typical review process, by all the Member states again together with the Commission, giving way to the identification of scoreboards of compliance to the targets and obligations, as well as identification of benchmarks.

In this process, all member states, almost imperceptibly but certainly efficiently, enter into a pathway of emulation, where each one by itself is drawn to do better and better in regard to its peers. Hence, contrary to the rather natural trend to seek and satisfy oneself with the lowest common denominator, the parties of this Common Implementation Strategy tend to seek optimal results, in a very dynamic and progressive attempt at circumventing difficulties and finding appropriate responses to problems which become clarified in the process.

In what may be taken as an almost ironic development, the Common Implementation Strategy, which is a non-legally binding informal process, supports the European Commission in delivering on its obligations for further policy development, thus contributing to the adoption of newer laws, such as the Daughter Directives on groundwater, flood risk management and priority hazardous substances.

More details on the overall concept, the numerous activities and the mandates of the Working Groups under the Common Implementation Strategy are given in the work programmes informally agreed by EU Water Directors, namely the following documents:

- “ Common Strategy on the Implementation of the WFD” ,
- “Carrying forward the Common Implementation Strategy for the WFD - Progress and Work Programme 2003/2004”,
- “Moving to the next stage in the Common Implementation Strategy for the WFD - Progress and Work Programme 2005/2006”,
- “Improving the comparability and the quality of WFD implementation – Progress and Work Programme 2007-2009”, “Supporting the implementation of the first river basin management plans – Work programme 2010-2012”.

5 Other solutions of possible use

A host of problems with institutional bearing detected in the consultations with Chinese counterparts and in the literature reviewed, seems to indicate that several of these institutional deadlocks or shortcomings have to do with the quality of the legislation available, the detail thereof or the apprehension thereof by relevant administrative authorities. If proved correct, this assessment seems to recommend a number of initiatives of both a legislative and administrative nature.

5.1 Further deepening of the legal framework

A recurrent criticism apprehended has to do with the generality if not vagueness of some of the provisions of existing legislation, particularly those relating to the duties of coordination and cooperation among administrative authorities involved in implementing the water related legislation and the proposed integrated water resources management in China.

It thus seems that it would be opportune to set up a working group, which would map the areas of water legislation in need of further elaboration by the enactment of decrees and regulations at both national, provincial and local levels that are needed to provide a clearer normative guidance to the administrative authorities involved.

The subsequent step would be to propose and enact such legislation and supporting guideline documents for the administrative authorities charged with transposing them into practice.

This exercise should have particular focus on the production of more detailed rules attributing explicit responsibilities of coordination and/or cooperation at both the “macro-level” typically the MWR, the “meso-level” of river basins and the “micro-level” of provinces and tributaries.

Another conceivable option, which actually is in conformity with the provisions of the 2002 Water Law, is to systematically assess the opportunity for inter-institutional agreements among the major actors in the water sector (ministries, bureaux, provinces, etc.) on how to proceed in meeting the goals set by both the water legislation and the No.1 Document, and in fulfilling the obligations therein.

For that, it might be relevant to consider setting up an inter-institutional committee entrusted with “brokerage” between powers at national level, akin to the ones which are awarded to the European Commission in the EU. More than a kind of “super-ministry”, this would be an entity working as a *primus inter pares* for ensuring that the competences of each partner are respected, but also that their exercise becomes a reality and is optimised.

Any body of the kind should also focus on identifying, establishing and adapting the procedures and instruments already available to address the most immediate problems. An example may clarify the intended: the current legislation already contains provision for a system of permits and licences both

for abstraction of waters and for emissions and water pollution, which should render possible to deal with crucial problems of water management. There is, however, a broad feeling that such instruments have not been sufficiently resorted to or not at the optimal level, where they may decisively contribute to address important issues of water management in China.

5.2 Focusing on implementation

Apart from assessing the implications of the existing water laws, particularly in view of the No.1 Document and endeavouring to perfect the existing legal framework with additional instruments aimed at filling regulatory gaps, detailing existing obligations in a more operational way or ensuring that they are properly replicated or transposed at the different levels of governance, there is also a very marked need to consider the additional tasks that need to be carried out to ensure that the existing legal framework is effectively implemented. More than a legislative, regulatory gap, the Chinese water sector seems to be plagued by a considerable legal implementation gap - related to the aforementioned institutional deadlocks or shortcomings.

For this, several solutions may be conceived. Among these, however, a very important one might be the setting up of a possibly inter-ministerial commission at a very high level tasked with monitoring and reviewing legal implementation of all the water legislation and related policy documents, whose results then should be fed back into the legal system in the form of proposed reform of legislation.

The recent adoption of the No.1 Document and its likely impact on both the legal and administrative edifice should thus be used as an opportunity to gain momentum in this much needed and yet uncharted direction.

In such context, an immediate goal would be to establish a strategic implementation action plan and support program, ideally with a clear timetable, for circumventing the most urgent implementation gaps detected. This plan should take the direction of an implementation support program, thus contributing supporting guidelines and operational documents to the relevant administrative authorities, particularly in those areas requiring further regulation, planning and/or detailing of the procedures and instruments to be used for implementing the applicable laws.

Among such areas where this approach might be of priority usage, we would expect to see the following:

- water drawing permit system
- resource fee and water charging system
- allocation process for inter-provincial rivers and water bodies
- design of water quotas or allocations, monitoring, implementation
- water saving mechanisms
- water quality targets
- pollution discharge permit system
- environmental flows.

An additional major concern should be the detailing of types of data, information and protocols on the access thereto, needed for carrying out efficiently the obligations and targets enshrined in the legislation and relevant policy documents.

6 Concluding remarks

Although insufficiently addressed or prioritised in the current exercise and the discussions held, it seems undeniable that the adoption and proposed implementation of the No.1 Document, in line with the existing water legislation, underline the relevance of the legal and institutional factor in the ongoing rethinking of integrated water resources management in the Chinese context.

Several of the major substantive deadlocks or shortcomings of the current water policy in China seem indeed to be explainable, if not predominantly, by the imbalanced consideration of the need to design an appropriate legal and administrative complex framework, which may facilitate or help achieving the intentions proclaimed by the legal and policy documents. There would thus seem to be room for recommending, that further studies and energies be dedicated at assessing the state of affairs in regard to these crucial factors, as a means and condition for ensuring an enhanced prospect of efficient implementation of the water laws and policies of China.

More specifically, it would also seem opportune to consider some of the strategies applied in the EU for overcoming particular insufficiencies of the Chinese administrative setting, especially the “hard” legally prescribed procedures and mechanisms of coordination and cooperation among different administrative authorities in a multilevel system of water governance.

Also the “softer” mechanisms to inspire coordination and cooperation, and enhance the quality of existing legislation, such as the Common Implementation Strategy process, may be applicable to China.

