THE YELLOW RIVER LAW:
A FRAMEWORK FOR INTEGRATED RIVER BASIN MANAGEMENT

George F. McMahon, Ph.D.[1/]

AUTHOR: [1/]Vice President, Technical Practice Director for Water Resources, ARCADIS, 2849 Paces Ferry Road, Suite 400, Atlanta Georgia
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Abstract: The Yellow River (Huang He) is the second largest of China's rivers, with a catchment area of 795,000km² and a stream length of nearly 5,500 km. The river flows through the cradle of the Chinese civilization, originating in Tibet in western China and passing through nine provinces to the Bohai Sea on the east. The Basin consists of three reaches with distinctive climatic, hydrologic, topographic, soil, and water and land use characteristics. The upper reach extends from desert areas in Qinghai Province to Yinchuan near the Ningxia-Inner Mongolia border, the middle reach downstream through the Loess Plateau into Henan Province, and the lower reach from Zhengzhou through the Yellow River Estuary in Shandong Province. Erosion of the Loess Plateau has aggraded the lower reach of river, and construction of levees for flood control in the lower reach has caused the riverbed to become 'suspended,' rising 10-15 meters above the surrounding densely-populated floodplains draining into the Huai and Hai Rivers on either side.

The Yellow River Basin is characterized by the most severe combination of flood, erosion and sedimentation, water scarcity and water pollution problems occurring anywhere in the world. Coordinated and integrated management of the Basin's water resources is vital to China's economic prosperity and protection of life, property, environmental quality and cultural heritage. The capacity for integrated river basin management (IRBM) is greatly diminished, however, by weaknesses and gaps in the current legal, policy and institutional frameworks for participatory planning.

From 2003 – 2004, the author led a team of international and domestic water resources, legal, institutional, and environmental experts assisting the Asian Development Bank, State implementing agencies and a National Steering Committee (NSC) in the analysis of opportunities for IRBM and preparation of a draft Yellow River Law (ADB TA3708-PRC, 2004). The implementing agencies were the China Ministry of Water Resources (MWR) and the Yellow River Conservancy Commission (YRCC). The National Steering Committee (NSC) consisted of these and other State agencies including the State Environmental Protection Administration (SEPA), the State Planning Commission, Ministries of Agriculture, Forestry and Land Administration, and representatives of the provincial governments and their administrative departments engaged in management of water and environmental resources. While the draft Law is designed principally to address the unique problems of the Yellow River Basin, it is widely viewed as a prototype for the Yangtze and other river basin laws, and as a major advance in efforts to reform primary water and environmental laws in China.

A location map of the Yellow River Basin relative to provincial boundaries is shown in Figure 1, and some of the Basin's more prominent hydrologic and geographical features are shown in Figure 2.

INTRODUCTION

Worldwide the Yellow River is known for high sediment load, acute water scarcity, poor water quality, severe flooding and the propensity of the river to change course in the lower estuarine reach. With a population approaching 150 million, of which 85 million live in areas prone to floods, flooding is a chronic problem exacerbated by sediment deposition in the lower reach. The River carries an average of 1.6 billion tons of sediment annually resulting from soil erosion in the Loess Plateau of the middle reach, most of which is deposited in the lower reach or at the river mouth. Control of soil erosion by reforestation and other forms of land reclamation has proven to be effective but has thus far been limited in extent.

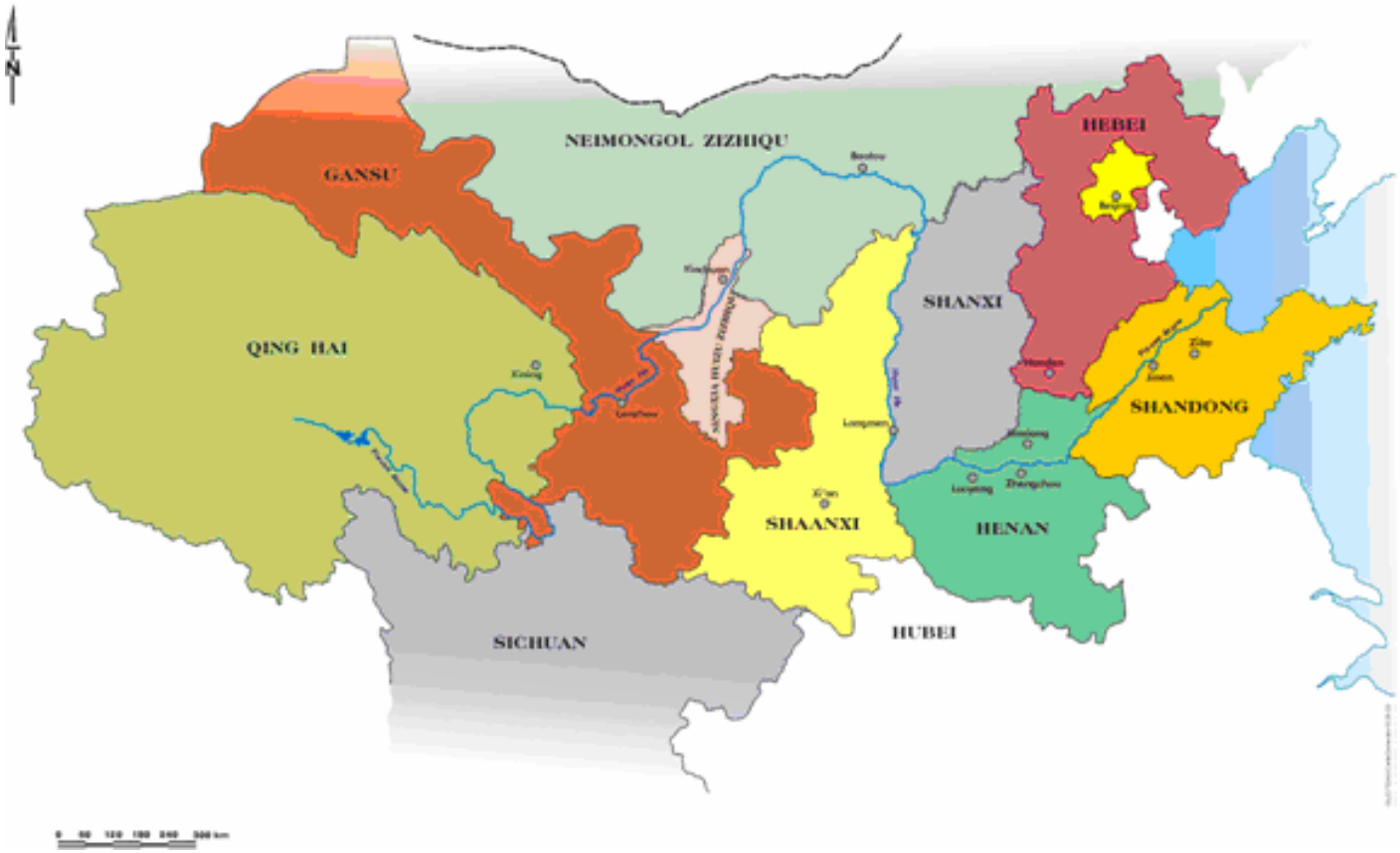

Figure 1. Yellow River Basin location map

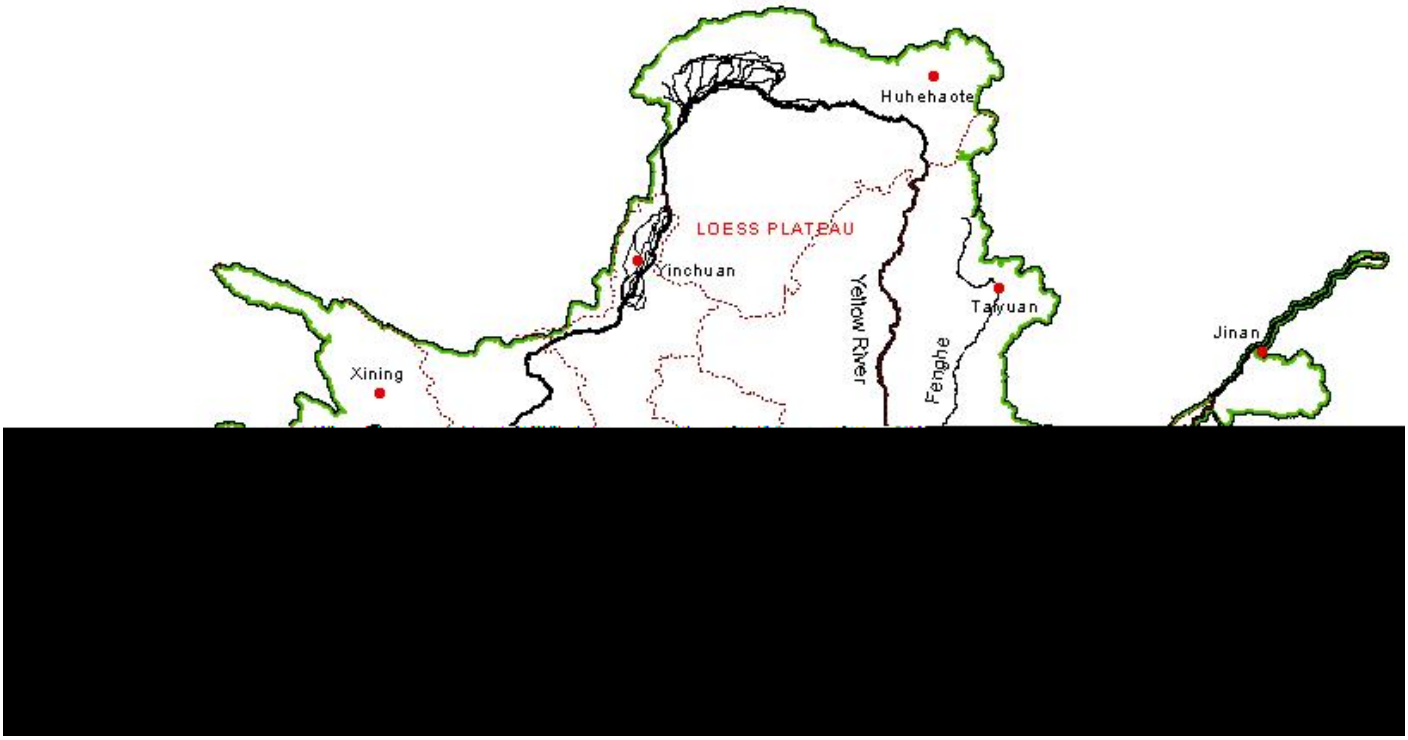

Figure 2. Hydrologic features of the Yellow River Basin

The raising of levees in the lower reach as the river bed rises due to sediment deposition is critical to prevention of annual flooding of the huge population centers, but unfortunately has produced the unintended side effect of suspending the riverbed up to 12m above the surrounding floodplain. The river has breached its levees more than 1,500 times in recorded history, on average one year in 3 to 4. The high sediment load and hydrologic extremes have altered the natural course of the Yellow River in the lower estuarine reaches many times throughout its history, exacerbating the huge economic and social costs of flooding.

Water availability in the Yellow River Basin on a per-capita basis is less than half of the average for China, which itself is overall only about one-quarter of the world average. This situation has led to unsustainable rates of groundwater extraction and resulting depletion of surface water flow. In drought years, irrigation and other water demands may exceed total surface flow, causing the river to run completely dry in the lower reaches with severe environmental and economic consequences. Even without considering the effects of climate change on hydrologic variability and the frequency and duration of extreme droughts, the problems of over-allocation are becoming more pronounced due to increasing water demand, lack of effective water conservation programs, and insufficient conservation storage in the middle reaches of the Yellow River Basin.

With extensive agricultural and mining activities in the middle reach of the Yellow River Basin, water quality is a serious problem even under normal flow conditions. During extended droughts with little or no instream flow for waste assimilation, pollution levels reach critical levels, threatening drinking water supplies and ecosystems throughout the Basin. The statistics of water pollution are striking: roughly 50% of total assessed river length for the entire basin (main stem and tributaries) were Class 5 or worse[1] for much or all of the year in 2001; 68% of total assessed length are worse than Class 3, the usual target in China for water quality (Weng, 2003). Despite investments in wastewater treatment in the large cities, water quality remains poor and transjurisdictional pollution disputes are increasing both within and between provinces.

These problems are highly interdependent and to be effectively managed require coordinated implementation of national laws governing water resources management, environmental protection, flood control, forestry, and soil and water conservation throughout the Yellow River Basin. Additionally water-sharing agreements, water and wastewater permitting, pollution monitoring, drought response, land management, and dispute resolution efforts must be jointly administered by the appropriate national ministries and the nine provinces. Gaps in the current legal/institutional framework prevent coordinated water management in the Yellow River Basin, and there is no national coordinating legislation comparable to NEPA in the United States providing authority for unified administration of environmental laws.

INSTITUTIONAL SETTING

The institutional context is a critical aspect of this TA, insofar as the need for a Yellow River Law arises principally from the failure of the present legal and institutional system to deliver integrated planning and management of water quantity and quality throughout the Basin and to coordinate effectively among the nine affected provinces (Qinghai, Sichuan, Gansu, Ningxia, Inner Mongolia, Shanxi, Shaanxi, Henan, and Shandong).

In China, water resources and water pollution management are primarily provincial responsibilities. Currently, the national legal framework does not provide for accountability of one province to the next for water quantity or quality nor any specific obligation to act in the interests of the basin as a whole. In fact, just the opposite occurs insofar as local governments tend to act out of self interest and make water management decisions based on local considerations such as employment and economic growth, a key factor in the over-exploitation of the River.

Water resources management is the responsibility of the Ministry of Water Resources (MWR), delegated to the Yellow River Conservancy Commission (YRCC) as the planning organ of MWR, and to the Provincial Water Bureaus for implementation and supervision. Water quality is the responsibility of the State Environment Protection Administration (SEPA), a central agency with overall planning responsibility for environmental programs, including water pollution control. Provincial pollution targets based on a basin pollution plan prepared by SEPA are provided to the Provincial Environmental Protection Bureaus (EPBs) for implementation. The development of pollution targets tends to be a bureaucratic exercise which, often unrelated to the actual conditions of the basin and producing as a result a string of failures in

[1] Water quality classes range from Class 1 (high quality) to Class 5 (unfit for human use).

meeting water quality targets in successive 5-Year Plans across China. SEPA has had considerable success in some parts of China in reducing overall industrial and, more recently, municipal loadings of COD, ammonia, and other pollutants. Nonetheless the small volume of flow in the Yellow River due to over-extraction for irrigation results in extremely high pollution loading. While the 2002 Water Law and the 1996 Water Pollution Prevention and Control Law call for consultation between SEPA and MWR to achieve a more integrated approach to water resources and water pollution planning and management, the fact remains that both ministries tend to work separately and submit separate and often incompatible water management plans to the State Council. Ambiguities in the legal framework lead to continuing problems of jurisdiction between the two ministries and produce extensive overlap in areas such as monitoring and assessment of water quality. Evidence suggests that the provinces feel squeezed between MWR and SEPA and would prefer to align themselves with a unified basin organization to assure consistent and equitable treatment and better integration of water quality and quantity management. The Yellow River Law is needed to address problems of jurisdiction and institutional interactions among MWR, SEPA, YRCC and the Provinces

Though not central to this study, the South to North Water Transfer Project, designed to bring Yangtze River water to the northeast of China, will affect water management to the extent that the East and Middle routes of the project will transect the Yellow River and may supplement or replace some of the water that is now diverted from the river. While this could potentially affect future water allocation decisions, in theory it would not affect the provisions of the Yellow River Law itself.

STRATEGIC PLANNING STUDY OBJECTIVES

Under contract to the Asian Development Bank (ADB), a joint international-domestic study team has completed strategic studies designed to provide a legal and institutional framework for integrated river basin management (IRBM), culminating in a Draft Yellow River Law. Once enacted, the Draft Law will enable coordinated water and environmental management and consistent application of national laws, regulations and policies within the Yellow River Basin and affected areas. Currently the Draft Yellow River Law is under review by the national ministries involved in management of water and environmental resources for recommendation to the National People's Congress. While the Yellow River Law is primarily designed to address the unique issues and problems of the Yellow River Basin, the legal and institutional framework it creates is similar in many important respects to other successful frameworks for IRBM around the world, and thus will undoubtedly serve as a model law for other river basins throughout China.

The objectives of ADB TA 3708-PRC *Strategic Planning Study for the Preparation of the Yellow River Law* are stated in the Terms of Reference as follows:

> "…to conduct strategic studies relating to integrated water resources management of the Yellow River basin and to search for legal countermeasures for outstanding problems in the Yellow River basin; to provide the National People's Congress (NPC) with data and recommendations in formulating the Yellow River Law."

The TA assesses the current legal and institutional framework for river basin management in China and in the Yellow River Basin in particular. This assessment, together with international best practices for effective and unified river basin management, inform the drafting of the Yellow River Law (YRL), which is intended to provide the institutional structure for implementation of national laws governing water resources, pollution prevention, soil and water conservation, and flood control in a consistent, integrated and participatory manner throughout the Yellow River Basin. The Yellow River Law is intended to functionally improve institutional capacity to address the following critical water resources and environmental concerns within the Basin and affected areas:

- *Water management*: Regulation, operation and maintenance of natural and engineered systems for water supply, irrigation, flood control, water quality and a variety of economically and environmentally-beneficial uses.
- *Water resources protection*: Monitoring, control and prevention of water pollution, and provision of adequate instream flows for waste assimilation, environmental quality, ecosystem integrity, and public health.
- *Flood and estuary management*: Maintenance and improvement of structural and nonstructural systems for management of morphological change, maintenance and improvement of channel conveyance, flood storage capacity, and flood preparedness to reduce the risks and costs of flooding.
- *Soil and water conservation*: Programs for conservation of land and prevention/control of soil

restoration to reduce sediment load in receiving streams, to maintain flood storage and conveyance capacity, and to improve water quality in the Yellow River Basin.

- *Comprehensive and integrated planning*: Principles, guidelines and procedures for planning and participatory planning processes to ensure rational formulation, evaluation and selection of alternative courses of action for future management, use and allocation of the water, land and environmental resources of the Yellow River Basin.

The Strategic Planning Study Report reflects the TA Team's assessment of the current state of affairs in the Yellow River Basin – water-related issues, problems and opportunities – and related weaknesses and gaps in the current legal and institutional framework. The Draft Yellow River Law represents the TA Team's prescription for legislation enabling effective and integrated river basin management; its success will ultimately be judged by the capacity created to deal with a complex array of interrelated and increasingly intractable problems arising over competitive exploitation of the basin's water resources. Solutions to these problems lie in careful planning, informed by (1) the accumulated wisdom and practical experience of the current generation of water managers, (2) the suggestions of stakeholders and an informed public, (3) shared data, models and information, and (4) international best practice guidelines reflecting enlightened but largely untested principles of sustainable water resource management.

The collaboration between the TA Team, implementing agencies, and the National Steering Committee (NSC) has produced a Draft Yellow River Law (YRL) designed to effectively integrate international environmental and legal standards with PRC national legislative standards, with the primary focus on practical river basin management. This approach extends and strengthens the river basin management provisions of China's existing "Four-Law" legislative system – the 2002 Water Law (WL), the 1991 Water and Soil Conservation (W&SC) Law, the 1998 Flood Control (FC) Law and the 1984 Water Pollution Prevention Control (WPPC) Law. Specifically, the Draft YRL 'operationalizes' the Four Laws within the Yellow River Basin through sound legal, organizational and technical provisions for (1) definition and clarification of roles, responsibilities and coordination requirements among the ministries and governments involved in river basin management, and (2) public participation in integrated planning and water management decision-making.

CONCEPTUAL YELLOW RIVER LAW

It is significant that the NSC, at the Interim Review meeting in June 2004, advised the TA Team to develop a draft YRL that reflected a modern management approach to river basin management, without undue concern for its relative ease of passage through the NPC. The NSC recognized that if certain aspects of the draft YRL deviated from conventional practices of water resources and pollution management in China, it would be preferable to adjust institutional thinking on the part of MWR, SEPA, and the provincial governments to the new procedures than to attempt IRBM under ineffective Law. The NSC also expressed the desire that the YRL reflect current international standards, codes of conduct, and widely-accepted obligations in river basin management of one party to another, and accountability of public officials. While all of these obligations are not fully defined in Chinese Law, the draft YRL is perceived to provide a unique opportunity for legal reform and conformity with internationally-accepted standards of environmental law and water resource management practice.

The YRL is not intended to empower any particular ministry or arm of government. Under the new Law the YRCC is given new powers, but within a larger administrative framework in which all stakeholders can participate and influence decisions that affect them. The Law is designed as coordinating legislation that enhances but does not supplant national laws. Moreover, where differences exist between the YRL and existing national or provincial laws, the YRL, when enacted, will take precedence.

The YRL clarifies many of the ambiguous aspects of national and provincial laws; specify authorities where these are ambiguous in law or are contested in practice between ministries; allocate duties where these are contested at operational levels; create specific legal standards where none now exist; establish mechanisms that establish and monitor accountabilities of all the parties; provide a greater range of dispute settlement mechanisms; enable accessibility to data and data sharing; and provide for public involvement and freedom of information. For pollution control, the YRL establishes clear roles and coordination responsibilities for SEPA and the MWR to minimize or eliminate duplication and overlap. In this regard the integration of water quantity and quality is of paramount

importance and takes precedence over the current conflicting jurisdictional interests of SEPA and MWR.

The YRL is prescriptive when specific details on process or procedures are required. However, for the most part the focus is on providing the authority for specific and expedient actions related to river basin planning and plan implementation. In some cases these actions may already be detailed in existing regulations (e.g. water allocation), and in other cases new regulations will be promulgated under the authority of the YRL. Moreover, the YRL permits the appropriate agency to develop an approach that is suitable to the basin and its constituents. Where the YRL is silent, the existing national legal framework takes precedence.

LEGAL FRAMEWORK

To strike an appropriate balance between the technical and legal input, and the time and budget allocated to the project, the TA Team considered and evaluated several alternative legal platforms for the Yellow River Law, as follows:

- Option 1: A complete legislative system, providing a framework for river basin management and a tiered hierarchy of laws, i.e. coordination law, new or amended existing primary laws, supporting rules and regulations, authorization for a new river basin organization
- Option 2: A "Water Law" system, based on expanded rules and regulations for river basin management promulgated under the Water Law and providing for a new river basin organization
- Option 3: A "Four Law" system, coordinating and enhancing the Flood Control, Water, Water Pollution Prevention and Control, and the Water and Soil Conservation Laws; this system would also create a new river basin organization
- Option 4: A regional legislative system, similar to Option 3 except for provision of separate rules and regulations for management of the three principle hydrographic areas of the Yellow River Zones; would create an umbrella river basin organization responsible for policymaking and coordination, and three separate regional implementation organizations.

The TA Team adopted the legal structure provided by Option 3, reasoning that the Four-Law approach is most consistent with the requirements for integrated water resource management – the core concern of the TA, the implementing agencies and the NSC. This option, shown in Figure 3, produces coordinating legislation that complements and expands existing national laws. A full analysis of the Four-Law system, its strengths and weaknesses, is found in the background document prepared by Hannam et al. (2004).

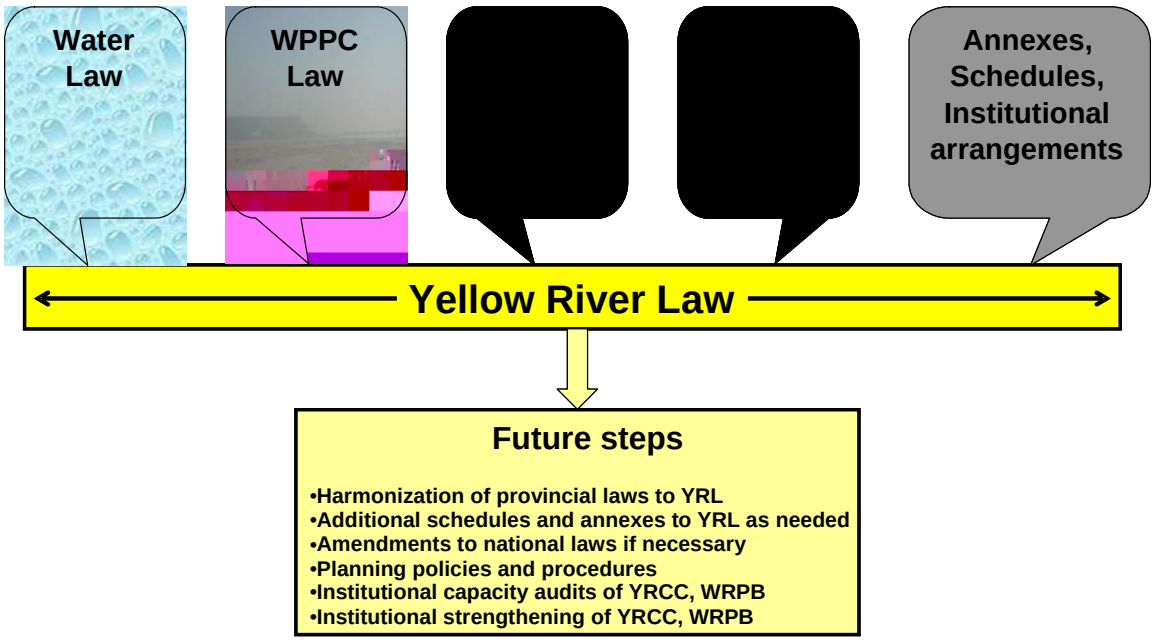

Figure 3. Conceptual Four-Law framework for the YRL

- Rational exploitation of water resources, i.e. most beneficial and sustainable uses appropriate to water quality function zones
- Rational allocation of water resources consistent with water availability and national economic and environmental objectives
- Efficient use and conservation of water
- Fully integrated planning and management at the river basin and regional levels

Participative planning and comprehensive planning are relatively recent concepts in China, though both are increasingly called for as the progress of national legal reform accelerates and the transition from centrally-planned to market economy becomes complete. The YRL seeks to distinguish between the objectives, process and procedures for long-term comprehensive planning and traditional 5-year plans. River basin planning must be comprehensive, multipurpose, integrated and long-term to reflect social preferences and sustainably provide for flood control, economic development, environmental quality and natural resource protection.

The Four Laws linked through the YRL provide a reasonably sound legal basis for comprehensive planning, but do not provide for the high-level institutional coordination needed for development of a framework for integrated planning, analogous to that developed by the Interagency River Basin Committee and the Water Resources Council in the U.S. since the 1950s. Currently planning guidance in China largely emphasizes implementation of water resources components of national 5-year plans. Little in the way of policies and procedures for integrated multipurpose planning exist, particularly with respect to the type of long-term planning and intra- and intergenerational distribution of benefits and costs characteristic of sustainable water resource development. Published regulations for river basin planning focus on cost-benefit analysis of individual planning purposes, e.g. flood control, hydropower, irrigation, municipal and industrial water supply, and others. Notably absent are criteria for balancing economic and environmental objectives in plan formulation, evaluation, and selection. The State Council has acknowledged linkages between the economy, population, resources and the environment, but does not describe how they should be properly handled in planning (Li 1998). Furthermore, the growing emphasis on sustainable development lacks a precise definition of concepts, measures and implications of sustainable water management. (Zhu 2000).

While the Water Law principles define overall goals of planning, they do not prescribe how they should be implemented or achieved. To guide sustainable and integrated river basin management, the Yellow River Law expands upon the Water Law and creates a planning framework that is practical in the near term and adaptable in the long term to changing conditions and social preferences, consistent with national policy and laws. The YRL planning framework draws heavily on U.S. policies and research, including the work of the Water Resources Council (1983), the President's Council on Sustainable Development (1996), the American Society of Civil Engineers (ASCE 1998), and the Corps of Engineers (USACE 2000, 2003).

The basic elements of the YRL planning framework are as follows:

- Definitions
- Planning principles
- Planning guidelines
- Socioeconomic analysis procedures
- Environmental analysis procedures
- Criteria for plan selection

To ensure the necessary flexibility and adaptability, the TA Team created an example planning framework in an annex to the YRL rather than incorporating it in the body of the Law. This approach will help ensure its continued utility as national policies and laws change, and that the Yellow River Basin can be managed to meet the present and future needs of society while maintaining its ecological, environmental and hydrological integrity.

DRAFT YELLOW RIVER LAW – ORGANIZATION AND CONTENT

The Draft Yellow River Law was prepared as a cooperative effort by the team members of ADP TA3708-PRC. It blends legal, institutional, technical and policy aspects of river basin management, international standards and conventions, and existing laws, regulations, policies and practices of water and environmental resource management in the People's Republic of China (PRC). The result is a "working law" adaptable by the National Peoples' Congress (NPC) to the coordinated management of water resources and water quality in the Yellow River Basin. The cooperative effort of this TA integrates international environmental and common law with PRC legislative standards, with the primary focus on practical river basin management.

The Draft Law is organized as follows:

- *Preamble*
- *Definitions*
- *Chapter 1: General Provisions* (legislative intent, jurisdiction, linkages with national laws and regulations, principles and objectives of river basin management, rights and duties, implementation provisions)
- *Chapter 2: Yellow River Basin Management* (river basin management system, organization, roles and responsibilities)
- *Chapter 3: River Basin Planning* (planning principles, data management, scope of planning, integration of water quality in comprehensive planning)
- *Chapter 4: Management of Water Resource Development and Use* (water quantity distribution and allocation, management of water abstractions, permitting and licensing, water resources fees, water rights and water rights trading)
- *Chapter 5: Water Quality Protection* (institutions and responsibilities, water pollution prevention and control, total load control and pollutant discharges, water quality standards in the Yellow River Basin, transjurisdictional water quality protection, no-point source pollution control, water quality monitoring and data collection, response to pollution emergencies)
- *Chapter 6: Management of River Courses, Engineering Work and Flood Control* (general provisions, management of water projects and systems, flood control responsibilities and procedures, estuary management)
- *Chapter 7: Water and Soil Conservation and Ecological Protection* (soil and water conservation principles and institutions, ecological protection zones, wetlands inventory and protection)
- *Chapter 8: Consultation, Participation, Information Disclosure and Reporting* (responsibilities for consultation and reporting, information disclosure, reporting requirements)
- *Chapter 9: Management of Financial Resources* (Yellow River Fund, compensation, subsidies)
- *Chapter 10: Dispute Resolution and Legal Liabilities* (legal and alternative dispute resolution mechanisms, responsibilities for transboundary damages, remedies and compensation in water pollution disputes, remedies and compensation in land and water disputes, legal liabilities)
- *Chapter 11: Supplementary Provisions* (terminology and list of Annexes

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