

流域管理与区域经济的协同发展

THOUGHTS ON
SYNERGETIC DEVELOPMENT OF
WATERSHED MANAGEMENT AND
REGIONAL ECONOMY



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1 中国流域管理的进步

中国河流管理模式为流域管理与行政区划管理相结合的模式。实际上，在自然资源管理，尤其是水资源管理方面，这两种管理模式基本上是契合的；但多数情况下，我们还是主张以自然流域为单元——大到黄河流域，小到集水面积为几平方公里的子流域或小流域——进行管理与治理。

在整个流域上可能分布着多个或多级行政区划，涉及公共资源、基础设施建设、生态系统、历史文化、人口资源、财富累积等

方面，所以流域管理需要将这些因素综合起来考虑。

新中国成立后，我们的治水理念发生了很大改变。新中国成立初期，国家资金有限，修建水利基础设施往往以经济最优化为出发点，采用最省钱的建设方式，只能满足保障人民生命财产安全的基本需求。近些年来，随着国家经济的发展，我们不仅保障了人民的生命财产安全，还会将水利工程周边的社会人文背景、生态环境，以及当地的城镇发展统筹考虑，这是一种可喜的进步。比如，“宽堤缓坡”的堤防形式就是一种将防

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摘要

受访人朱庆平为中国流域治理专家，在本次采访中，他以中国流域管理模式与治水理念的变化作为切入点，强调流域管理需综合考虑公共资源、基础设施建设、生态系统、历史文化、人口资源等因素；继而聚焦于黄河治理，阐释了河流演变与城市发展之间的相互作用与影响，在反思治水思想的同时，指出当下正是黄河下游沿线城市发展的大好机遇，并提出了建立“黄河国家生态文化带”这一构想；最后，朱庆平指出，流域治理需要多行业、多学科、跨地区、跨部门协作，并应当重视公众参与和社会维护在流域管理中的重要意义，以及通过在未来建立“智慧水务/水利”大数据综合集成平台，实现水资源供给与水安全保障的智能化、协调化发展。

关键词

流域管理；区域经济；公共资源；协同发展；黄河流域；智慧水务/水利平台

ABSTRACT

Zhu Qingping, the interviewee, is a prominent expert in China's watershed management. Starting with the modes of China's watershed management and the changes of water management philosophy, Zhu emphasizes that watershed management often involves various factors, including public resources, infrastructure construction, ecosystems, historical and cultural traditions, and population, all of which shall be taken into consideration as a whole. The interview then goes to the management of the Yellow River Basin, where Zhu explains the impacts between river flows and urban development, suggests a great opportunity for development the cities in the lower reaches of Yellow River Basin have, and proposes an idea of building a national ecological and cultural belt along the river. He further argues that watershed management requires collaborations across industries, disciplines, and administrative regions and divisions. He also believes that public engagement and maintenance plays an important role in watershed management and an intelligent water / watershed management system needs to be established by networking integrated big-data platforms to facilitate a more intelligent and coordinated water resource management while better ensuring water security at varied scales.

KEY WORDS

Watershed Management; Regional Economy; Public Resource; Synergetic Development; Yellow River Basin; Intelligent Water / Watershed Management System

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洪安全、景观要素、生物栖息地与百姓的生活需求相整合的做法。这就好比从前我们是在做棉袄，仅为了保暖需要；现在我们是在做时装，既实用又美观。

2 黄河治理的反思

河流发展需要空间。在自然界中，一条几十米宽的河流可能拥有几百米乃至上千米宽的河漫滩。这是河流的自然演变痕迹，如果人类将这些漫滩保留下来，那么河流便不会对人类生产生活造成很大影响，我们也不需要建造很多堤坝。

城市发展也需要空间。临水而居，择水而憩，自古就是人类的天性。河滨地带一直是人类栖居的黄金宝地，随着城市发展不断向河漫滩延伸，河道空间被渐渐压缩。为了确保防洪安全，构筑堤防就成了不得不去做的事情。以黄河为例，在黄河两岸建造堤防的做法始自明清，黄河是一条多泥沙河流，泥沙不断在河底形成大量淤积，下游河床不断抬高；为了保护下游百姓，黄河大堤不断加高，从而有了“黄河涨上天”的说法。新中国成立之后，中央对黄河治理非常重视，但仍主要沿用传统的堤防做法，几乎每隔十年就加高加固一次。

我们逐渐意识到这种治理方式非常被动——长此以往，黄河岂不是要比华北平原高出几十米、几百米么？当开始反思黄河治理问题时，我们又恰恰处在一个历史的拐点：黄土高原的水土保持和生态修复效益，以及小浪底水库所发挥的“调水调沙”功能逐渐显现，使得正常年份入黄泥沙量由以前的每年10亿吨减少至每年几千万吨——90%的泥沙没有了，黄河下游的淤积情况得到逆转，在河水冲刷下，河床开始呈现下切趋势，这是在过去想都不敢想的好事！

与上海、武汉、南京等直接将主城区临河而建的长江流域沿岸城市不同，黄河流域沿岸城市（如郑州、开封、济南等）的主城区都与河流留出了十几公里不等的空地，这是在数百年的黄河治理岁月里先人们总结出的经验：当这条“害河”决口的时候，百

姓们可以有逃命的时间。这些沿岸的空地可以被称为“中原留白”，因为这些地区没有那么多的财富积累，也没有那么多的人类遗存。而现在黄河下游的新局面，为沿岸城市提供了一个非常难得的滨河发展机遇。我们提出了建立“黄河国家生态文化带”的构想，以黄河为主轴，沿大堤建设城市新区，带动城市经济、生态、社会、人文的全面发展：将这些滨河城市用生态廊道、水系和景观连通起来，并结合休闲观光产业和现代集约农业，构建具有完整堤、水、林、田、河、城生态系统的向外延伸的黄河生态绿廊和展示黄河文明的历史文化景观长廊。

3 更加智慧、更加协调的未来

流域治理要从根本上去治，从源头上去治，要系统地治，要可持续地治。这需要多行业、多学科、跨地区、跨部门协作。然而，流域治理常常面临着多重矛盾与冲突。例如，在水利层面长久以来存在洪水防护与水资源供给这对突出的矛盾：上游水库为了给下游地区供水就需要多蓄水，而在汛期，为了保证防洪安全就必须把水库排空。此外，流域治理常常会与不同城市的产业布局相冲突。如果大家都只着眼于各自城市、各自部门的利益，那么冲突将永远得不到解决。只有学会倾听、学会妥协，才能达成满足各方利益诉求的结果。

此外，需要强调的是，很多流域治理问题不是仅靠一次性投资就能够解决的，还需要考虑公共参与和社会维护，才能使项目取得持久性的经济、生态及民生效益。在未来，城市建设必须与包括河流保护性开发在内的流域治理同步规划、同步实施、同步发展，从规划初期开始就融入海绵城市建设等理念，以人、水、城和谐共生为终极目标。同时，我们还需大力发展“智慧水务/水利”，通过建立大数据综合集成平台，为祖国的各个流域更加准确地问诊把脉，在水质水量实时监测的基础上，实现水资源供给与水安全保障的智能化、协调化发展。**LAF**

1 Progress of Watershed Management in China

In China, a combination of watershed-zoning and administration-zoning regulations has been adopted in river management. Although the both zoning regulation modes are coincide in some cases of natural resource management — especially water resources — it is more recommended to employ a zoning regulation and management that identifies natural watersheds, be it large basins like Yellow River or small watersheds only covering a few square kilometers.

An entire watershed is often under several administrative regulations at varied levels, relating with different

public resources, infrastructure construction, ecosystems, historical and cultural traditions, population, properties, and other aspects, all of which shall be taken into consideration as a whole.

China’s water management philosophy has seen a profound change over the past half of century. In the early years of New China, the country was financially limited and all water conservancy infrastructures were constructed in an economical way as long as ensuring the safety of people’s life and properties. In recent decades, along with the growth of China’s economy, it is exciting to see that such infrastructure projects have begun to further take social, historical, ecological,

1. 黄河国家生态文化带之
郑州黄河新城空间布局
规划愿景
1. New Town Planning
in Zhengzhou, one of
the key cities on the
Yellow River National
Ecological and Cultural
Belt.



- 农田果林
Farmland and Orchard

商业用地
Business and Commercial Use

轻轨站
Light Railway Station

居住用地
Residential Use

公共绿地
Public Green Space

水体
Water Body
- 1 田园综合体 Pastoral Complex

2 国家湿地公园 National Wetland Park

3 拓展运动基地 Outward Bound Training Base

4 大河儿女游乐园 Playgrounds

5 黄河文明博物院 Yellow River Museum

6 水主题景区 Water Features

7 文创商业街 Cultural-Innovation High Streets

8 望河大宅 Villas

9 湿地商业街 High Streets in Wetland

10 中央商务区 CBD

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and environmental factors, as well as local urbanization processes, into considerations. For example, the design of widening embankment and grading mild-slope integrates flood control measures and landscape elements, which not only creates diverse habitats for wild animals but also meets people's living, recreational, and aesthetical needs.

2 Reflections on the Management of Yellow River Basin

Rivers need space to flow and grow. A natural river with a width of mere dozen meters can shape a flood plain of several hundred or a thousand meters wide. This is the trace of swings and changes by nature. If we, humans, keep and preserve such flood plains, our life and production activities would not be much impacted, and not a lot of dams or embankments would be needed.

Cities need space to grow as well. Human beings prefer to get close with water, with riversides being a particularly ideal place to live. Cities' sprawl encroaches river courses and humans build embankments to prevent floods. The Yellow River, for example, is well known as a sediment-laden river with a rising riverbed, and a series of dams in the lower reaches have been constantly built and reinforced since the Ming and Qing dynasties, making the river increasingly elevated of meters higher than the North China Plain. The New China government attached much importance to the flood control of the Yellow River Basin mainly by employing traditional methods of regular embankment construction and reinforcement.

Such passive control methods are

ended until now because we are in a "watershed" of the management of Yellow River Basin: beside concept changes in watershed management, the success of water and soil conservation and ecological restoration of the Loess Plateau, as well as the outstanding performance of water and sediment regulation by the Xiaolangdi Reservoir, has resulted in a huge reduction of the sediment in the river by billions of tons each year — at present the sediment amount of downstream is only about one tenth of that of before and the course height in the lower reaches is also lowering. What an unbelievable change!

Unlike Shanghai, Wuhan, or Nanjing which locate their downtowns along the Yangtze River, the cities in the Yellow River Basin, such as Zhengzhou, Kaifeng, and Ji'nan, always keep a few kilometers away from the main course, leaving locals enough time to escape when floods occur. Few historical or cultural heritages, nor constructed properties, remain in such barriers, the so-called "blank riverfronts in China's Central Plains." Today, cities along the lower reaches enjoy an excellent opportunity to develop such blank areas. An idea of building a national ecological and cultural belt along the Yellow River is proposed: A number of new urban districts would be developed to drive local economic, ecological, social, and cultural development by reconnecting the riverside cities with ecological corridors, water systems, and landscape networks; a green valley would be formed which integrates constructed infrastructures and urban fabric with improved ecosystems of rivers, forests, and farmlands, celebrating historic and cultural traditions and characteristics of the Yellow River.

3 Envisioning a More Intelligent and Coordinated Future

Watershed management needs systematic and sustainable solutions, which requires collaborations across industries, disciplines, and administrative regions and divisions. However, conflict happens sometimes. Flood control and water supply often cause big conflicts in particular. To supply water for lower reaches, reservoirs in upper reaches are expected to store water; but the reservoirs must be sluiced during rainy seasons. Industrial distribution among cities causes another conflict in watershed management. If every city simply focuses on their individual interests, such conflicts would never be solved. A healthy watershed management can be only realized by communicating and compromising among all parties.

It is worth emphasizing that watershed management cannot only rely on financial investments, but also requires public engagement and maintenance to ensure long-term economic, social, and ecological benefits. In future, urban development and watershed management that includes protective river development shall be planned and carried out in a synergetic way. Concepts such as sponge city construction shall be adopted in the early stage of planning, envisioning a greater harmony between humans, rivers, and cities. An intelligent water / watershed management system needs to be established by networking integrated big-data platforms to monitor and offer real-time information of rivers nationwide, facilitating a more intelligent and coordinated water resource management while better ensuring water security at various scales. **LAF**