

## REVIEW AND VISION ON YELLOW RIVER DRYING-OUT

YAOZENG LUO<sup>1</sup> and HONG GAN<sup>2</sup> LING WANG<sup>3</sup>

<sup>1</sup>. Research Fellow, Department of Water Resources, China Institute of Water Resources & Hydropower Research (IWHR), 20 Chegongzhuang West Rd. Beijing 100044, P.R.China  
(Tel: +86-10-6878-5606, Fax: +86-10-6848-3367, e-mail: liugeli@giwp.org.cn)

<sup>2</sup>. Professor, Department of Water Resources, China Institute of Water Resources & Hydropower Research (IWHR), 20 Chegongzhuang West Rd. Beijing 100044, P.R.China  
(Tel: +86-10-6878-5601, Fax: +86-10-6848-7557, e-mail: ganhong@iwhr.com)

<sup>3</sup>. Professor, the Bureau of Hydrologic Survey, Yellow River Conservancy Committee,  
East 12 Chengbei Road, Zhengzhou, 450004, P. R. China  
(Tel: +86-371-66023319, Fax: +86-371-66024243, e-mail: wlyrcc@sina.com)

### Abstract

The Yellow River, the mother-river of China, has been breeding the Chinese civilization for more than 5000 years. Due to the climate changes and negative impacts of human's activities, this famous river had been drying-out many times almost every year during 1972 to 1999. Since 2000, the drying-out has been successively controlled for five years by multiple measures. However, why did the drying-out happen? What measures are needed to prevent the river from drying-out? What will we do and what can we do for our mother river in future? These are the main subjects we will discuss.

In the begin of this paper, a brief introduction of the river basin is given, including the length of the river, the area and population, the general situation and characteristic of water resources, the cause of the hanging river.

The first time of Yellow River drying- out occurred on 23rd, April, 1972, and then it had occurred three times in that year (Table 1). The length of drying-out river course was up to as long as 310 km from the river month. After then, the times and the length of drying-out river successively increased. The situation was most serious in 1997, in which Yellow River drying-out had been occurred 13 times and the longest length of the river course was 704 km. It is counted that the Yellow River had been drying-out almost every year during 1972 to 1999. The frequency of it was 72 times and lasted 1058 days in total. Meanwhile the harmful results caused by Yellow River drying-out to region's national economy in lower reach areas, urban water supply and eco-environment were also evaluated.

The main causes of Yellow River drying-out are deduced to climate changes, successive arid and less rainfall, shortage of total water resources, over-drawing of riparian provinces, hanging river course of the lower reaches, the lack of groundwater recharging and so on.

Then the proposal to solute for the Yellow river drying-out is discussed. Firstly, it consists of renewing the conception of water resources management, setting up a new guideline i.e. "co-existing harmoniously between human and ecosystem", "achieving balanced development among population, resources, society and economy", and ensuring the utilization of in-river eco-environment water requirement. Secondly, it promotes water saving and water resources protection including raising the efficiency of water use and efficient governing the total utilization of water resources. Thirdly, it enhances integrated water resources management including overall allocation of water resource in whole river basin and the regulation of the sluices along the lower reaches strictly to ensure non-

occurrence of drying-out of the Yellow River. Fourthly, it regulates the water price and encourages water saving by economic means. Through various measures, especially since 1999, the State Council authorized the Yellow River Conservancy Commission(YRCC) to allocate water resources in the main courses of Yellow River, which reduced drying-out time of Yellow River rapidly to 8 days in that year. And from 2002 to 2004, they achieved non-occurrence of drying-out of the lower reaches of Yellow River for 5 years successively.

A long-term view on maintaining the Yellow River is taken in the end of the paper. Although the drying-out of Yellow River has been controlled in recent years, the water shortage in Yellow River Basin is still continuous, so the water saving and water pollution prevention should be promoted persistently to increase the water resources carrying capacity. Yellow River is famous in its sediment discharge and difficult to regulate mostly in the world. Therefore, water and soil conservation is the key measure to protect Yellow River from drying-out. The South-to-North Water Transfer Project is the strategic measure to allocate water resources rationally which solves the deficiency of total water resources in North area. The complement of the project will give great vigorousness to the Yellow River. Enhancing the integrated water resources management, capacity-building of the river basin's management agency, international exchanging and corporation, assimilating international advanced experience and improving the capability of management is the important guarantee for the sustainable utilization of water resources of Yellow River.

Table 1. Status of Yellow River drying-out

Drying-out years Periods	Longest drying-out in year (years)	(days)	average length of drying-out (km)
1972 – 1979	6	21	130
1980 – 1999	7	36	150
1990 – 1999	9	226	426

#### REFERENCES

- Wang Shucheng, Resource-oriented water management: Towards Harmonious Coexistence between Man and Nature, China Waterpower Press, 2002  
 Ministry of Water Resources, China Water Resources Bulletin, 2000