China calls for human–water harmony
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Abstract

In order to achieve a more sustainable mode of development, the government of China declared its intention to build a harmonious socialist society, and the Ministry of Water Resources (MWR) proposed ‘human–water harmony’. However, some problems still exist in China’s water resources management (CWRM), which affect management performance and trigger acute water crisis. Nowadays, the human–water relationship in China is disharmonious and the relationship between human activities and water resources has entered into a vicious cycle. This paper concluded that achieving human–water harmony is a necessary and rational pathway to solve China’s water problems on the basis of reviewing the development course of CWRM. In order to achieve human–water harmony in China, many impressive efforts both in terms of policies and measures have been made. Ultimately, they pointed out that human–water harmony can be achieved through our tireless efforts as long as people hold the belief that the idea of ‘human–water harmony’ is the first and the foremost way to deal with the contradiction between human activities and water resources.

Keywords: China; Human–water harmony; Human-water relationship; Water crisis; Water resources management

1. Introduction

‘Humanity stands at a defining moment in history,’ as Agenda 21 (UNEP, 1992) pointed out, and this is highly applicable to China. China’s comprehensive strength has been dramatically enhanced, Chinese consumption and living standards have made great progress, and China’s weight in international affairs has increased exponentially through implementing unwaveringly the reform and opening-up policy. Indeed, the country has been labeled an ‘economic miracle’ in the late 20th century, and it is noteworthy that China passed Japan in the second quarter of 2010 to occupy the world’s second-largest economy country behind the United States. However, with economic prosperity, the social and political issues of the country have seen little progress. On the one hand, China faces an increasingly divided society due to a combination of factors such as widening regional disparities, structural poverty, rising income

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inequalities, a tattered social and welfare system, massive unemployment, and rising environmental concerns. On the other hand, previous policy decisions to lie low are becoming more and more untenable, not to mention hypocritical in the eyes of the international community (Zheng & Tok, 2007). The domestic and international realities have compelled the government of China to look into the issues beyond economic development. China has realized that it is time to discard its erstwhile infatuation with economic achievement to pursue a more sustainable mode of development. Against this backdrop, China declared that the establishment of a harmonious society should be a top priority and basic development goal during the Sixteenth Central Committee of the Communist Party of China in October 2006. Meanwhile, ‘building a harmonious world’ also became the basic foreign policy of China. Recently, China has been advocating the harmony idea, which has gradually become a core of the Chinese outlook on value. In a manner of speaking, building a harmonious society has been a pursuit and a dream of the Chinese for centuries, especially in the context of China’s rapid economic growth and dramatic social changes in recent years.

The harmony idea is not a new term in China and it appeared as early as in ancient China. For example, ‘Unity of Human and Nature’, a prominent idea proposed by an ancient philosophy of China, does not only reflect an interpersonal harmony but also emphasizes the harmony between human civilization and natural resources. Undoubtedly, ‘Unity of Human and Nature’ has exerted great effects on China’s culture. Before China’s government clearly demonstrated its intention to ‘build a harmonious society’, Wang, the former Minister of the Ministry of Water Resources (MWR), proposed that promoting a harmonious relationship between human beings and water was a new idea of China’s Water Resources Management (CWRM) in 2002 (Xinhua News Agency, 2002). Then the theme of the 17th China Water Week for 2004 was identified as ‘human–water harmony’, and the leaders in this field called on society to gain a better understanding of the relationship between human beings and water. Hereafter, the related scholars of China have begun to actively do research on this topic, and to explore a more effective way to deal with the interactive mechanisms between human activities and water resources.

2. Human–water relationship in present-day China

2.1. Main problems in China’s water resources management

Water is the source of life and the link that binds all living beings on this planet, a material basis for socioeconomic growth, and a principal guarantee for sustainable development. However, the primary problems with water resources in China are poor average per capita water resource, uneven distribution in time and space, and inconsistent combination of water and land resources, which have been the main constraints of China’s development. Even more unfortunately, although China has experienced the fastest ever socioeconomic growth over the past three decades, it has not made commensurate progress in managing and planning its water resources. Overall, the current situation and existent issues of CWRM are roughly as follows.

(1) The function and power of institutions regarding CWRM are decentralized. At the central government level, MWR is mainly responsible for water quantity and utilization efficiency, while the Ministry of Environmental Protection (MEP) is in charge of water quality (Liu & Yang, 2012). Although China has established the river basin management commissions for major rivers and lakes, the power of these
commissions is limited to allocating water resources and coordinating water resource exploitation and conservation at the basin level. Moreover, local protectionism is serious, and disputes regarding the ownerships and usage rights of rivers and lakes often occur among different districts. (2) The legal system of CWRM is imperfect, an important embodiment of which is that the current penalty associated with violation is far lower than the compliance cost. For instance, the Songhua River in north-east China suffered from a major water pollution incident in 2005, which not only caused significant economic losses, but also resulted in severe consequences to the water supply of millions of residents and had significant influence in the world. Sadly, under the current laws and regulations, MEP has limited authority to impose a penalty less than one million RMB. (3) The price system of water resources is unreasonable, which is mainly embodied in four aspects: (i) the generally low standards of water fee collection, (ii) the similar water prices for industrial and domestic users, (iii) weak supervision, and (iv) an irrational water price structure. All of these deficiencies tremendously influence the water-saving enthusiasm of enterprises and individuals, and restrain the economic and pricing management of water resources from playing an important role in economic leverage. (4) People seriously lack a sense of urgency regarding water resources as a result of the lack of a wide range of water-saving publicity and education, and water-saving technologies and equipments are relatively backward. Remarkably, all the existent issues of CWRM have led to the low use efficiency of water in China. At present, Gross Domestic Product (GDP) per 1 m³ water in China accounts for a third of the world average level and the use efficiencies of irrigation water reach a mere 0.50, lagging far behind the world advanced level of 0.7–0.8.

2.2. Current relationship between human beings and water in China

Given the characteristics and poor management of water resources, China is now facing an acute water crisis coupled with rapid economic development and urbanization with a large and growing population. Water crisis principally involves three key areas: water scarcity, water pollution, and flooding. It is a considerable challenge among the numerous environmental problems in China and is an important but easily neglected issue (Yang et al., 2012). It’s worth mentioning that severe conflicts exist between water supply and demand. For example, the per capita availability in 2007 was 2,156 m³ per year, only a quarter of the world’s average level; among 667 cities in China, about 400 cities have been reported to have water shortages. Besides, water pollution is widespread and severe in China. A report issued by China Geological Survey shows that 90% of the country’s groundwater has been polluted, and 60% of the sources have been polluted severely (Qiu, 2010). According to China’s 2013 State of the Environment Report, about 28.3% of the state-controlled river sections distributed in 10 large river basins across China contained water graded Class IV, V or worse and were deemed unsafe for human consumption. The report also revealed that 59.6% of a total of 4,778 groundwater monitoring sites were faced with poor or worse water quality. Statistics showed that 31 provinces (cities, districts) suffered from floods at different levels in 2013, which affected 120 million people and even killed 774 people, and caused direct economic losses of 314.6 billion (10⁹) RMB (China News, 2014). On the whole, the growing water problems have become major threats restraining the sustainable socioeconomic development of China, and it is an important but tough task to resolve its water crisis. If the government can’t overcome these serious water issues both in terms of quantity and quality, people’s health and quality of life will be threatened, not to mention also the threat to maintaining this strong economic growth momentum. Therefore, the related scholars of China have been thinking about how to treat and manage water
resources and what should be the new guiding ideas of the modern CWRM. That is, how should the human race get along with water? There is no doubt that building a harmonious relationship between human beings and water is a correct and rational pathway.

However, the human–water relationship in present-day China is disharmonious, and the relationship between human activities and water resources has entered into a vicious cycle. Water pollution can lead to people suffering from diseases, impede economic growth, and eventually result in poverty. Besides, many people are likely to move to other new areas due to the serious increase of water pollution, which will cause some new social and environmental problems. In the face of such a disharmonious human–water relationship, China has recognized that tackling these water-related challenges needs a fundamental shift in the approach to managing water resources.

3. Human–water harmony ideas

3.1. Understanding of human–water harmony ideas

Looking back on human history, as the ideas of CWRM changed, the relationship between human beings and water changed accordingly. To date, CWRM has passed through roughly three stages (Figure 1).

The first stage, before the middle of the 20th century, is called the primary stage of CWRM. During this period, humans seek water and earn their livelihoods, and water resources are mainly used for both crop irrigation and fishing. This stage belongs to demand-based water resources utilization, and the management focuses on dealing with all kinds of water disasters. The second stage, from the 1950s to the early 1980s, is called the development stage of CWRM. The human–water relationship has become

![Fig. 1. Development stages and characteristics of CWRM.](https://iwaponline.com/wp/article-pdf/18/2/255/404293/018020255.pdf)
increasingly hostile in this phase. The primary task of CWRM is to formulate the exploitation and utilization planning of water resources based on the demands of various sectors. The third stage, from the 1980s to the late 1990s, is called the rapid development stage of CWRM, which accompanies the booming socioeconomic expansion and explosive population growth. The increasingly tense human–water relationship and rising environmental protection awareness have prompted people to build a further scientific understanding that water resource is limited and exhaustible. The ethic of sustainable development has gradually become an important principle of CWRM. China is on a path of controlling water according to the law and advocates water resource sustainable utilization.

Finally, the last stage – one that is yet to fully occur – is called the formative stage of modern CWRM from the late 1990s to the present, which is characterized by harmonious equilibrium between human beings and water. On the basis of advocating unified and sustainable water resources management, China put forward the idea of ‘human–water harmony’, which not only reinforces but also extends the main principles of CWRM. Taking ‘human–water harmony’ as the guiding ideology, China successively proposed ‘Interconnected River System Network (IRSN)’, the ‘Strictest Water Resources Management System (SWRM)’, and ‘water ecological civilization’, which collectively constitute the last ideological system of modern CWRM.

The strategic thinking of ‘building a harmonious society/world’ sends a signal that China is moving into a new stage of development. ‘Human–water harmony’, as a key factor for achieving a harmonious society, is one of the mainstream initiatives discussed by the public and government in China. Unquestionably, the human–water harmony idea is becoming the core content of thoughts of CWRM in the new period, and people are accepting ‘human–water harmony’ and recognizing its importance. In our opinion, harmony represents a natural, coordinated and orderly development status, which is also an action taken to achieve ‘coordination, accordance, balance, integrity, and adaptation’. The human–water harmony needs to be established in human orientation as well as in a comprehensive, coordinated, sustainable science development view; the natural rules and laws of socioeconomic development need to be respected in order to address water shortages, flood disasters, soil erosion and water pollution; and coordinated socioeconomic development and water resources management should be promoted, in order that eventually a harmony status could be achieved. Different from the view of sustainable development, ‘human–water harmony’ gives full consideration to water ethical values based on the unity of humanism and naturalism while getting rid of the constraints of the concepts like anthropocentrism and non-anthropocentrism. The idea of human–water harmony is a new concept of water resources management proposed by synthesizing the ideas of harmony both at home and abroad, which calls on people to equally treat and respect water resources, and extend moral concerns to the relationship between human beings and water, instead of recognizing water as a commodity. The main targets of ‘human–water harmony’ include three aspects: (1) socioeconomic sustainable development can be achieved, which requires simultaneously meeting the needs of the present and future generations; (2) the aquatic ecological environment can be improved steadily, and the self-clean capacity of the water body can be increased constantly; and (3) the relationship between human activities and water resources can enter a benign development status. Socioeconomic development in a good aquatic ecological environment may make higher profits. Meanwhile, socioeconomic sustainable development gives impetus to aquatic ecological environment protection. In order to achieve the harmony between human beings and water, people need to establish and adhere to a strong harmonious consciousness in their thinking, and properly handle the relationship between water resources utilization and protection in their behaviors.
3.2. China’s efforts in promoting human–water harmony

China has been calling for ‘human–water harmony’, and many impressive efforts have been made in order to achieve human–water harmony in China. The 2011 No.1 Document by the Central Committee of the Communist Party of China (CPC) for the first time focused on the reformation and development of water conservation over the past years. In order to achieve control of development and utilization of water resources, control of water use efficiency and restriction of pollutants in water function areas, the SWRM approach was proposed in 2009 and conscientiously carried out in 2012 (Zuo et al., 2014). The IRSN plan was put forth in 2013, which endeavors to improve the carrying capacity of water resources, prevent floods and droughts and match water resources to human activities (MWR, 2013). In the same year, MWR put forward ‘water ecological civilization’, which sets out to instill the notion of ecological civilization into development, utilization, allocation, conservation and protection of water resources, and represents a peaceful, just and sustainable water ecological future (Jin, 2008; Zuo & Cui, 2013). The SWRM, IRSN plan and water ecological civilization idea have become the main body of water-control thinking based on human–water harmony, which greatly raise public awareness of human–water harmony and profoundly affect people’s behavior in daily life. In addition, a series of measures have been carried out to efficiently use and protect water resources, coordinate the relationship between human activities and water resources, and to guarantee socioeconomic sustainable development. In recent years, the government of China has been dedicated to reinforcing unified regulation of water resources, improving the laws and regulations system, enhancing leadership accountability, accelerating water-saving technological renovation, intensifying inspection and supervision, practicing paid use of water and launching extensive publicity about the water crisis and the importance of human–water harmony, and so on. It’s worth mentioning that China’s government hopes to encourage residents to save water through adopting tiered pricing, and requires all cities in China to charge tiered prices for household water by the end of 2015, in which the price differential among the three tiers should be no less than 2:3:6 (Xinhua News Agency, 2014).

4. Conclusion

After an untiring struggle over the past several years, the relationship between human beings and water in China is going well. The idea of ‘human–water harmony’ has been inscribed deeply in socioeconomic development and the private lives of people, and the contradiction between human activities and water resources is starting to ease. Although there is still a long way to go to put the ideas into practice and achieve the final objectives, we believe that a very good start has been made. As long as people hold the belief that the idea of ‘human–water harmony’ is the first and foremost way to deal with the contradiction between human activities and water resources, the final victory will be assured through our tireless efforts.

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