

Analysis of status and countermeasures of water-saving in Zhejiang Province under new situation

Longqiang Su^{1,a,*}, Kaiwen Chen^{2,b}

¹ Zhejiang Institute of Hydraulics & Estuary, Hangzhou 310020, China

² Zhejiang Qianjiang Technology Development Co., Ltd. Hangzhou 310012, China

^a794199866@qq.com

^b190945915@qq.com

*Corresponding author

Keywords: Water-saving, Countermeasures, Zhejiang Province.

Abstract. In recent years, the continuous growth momentum of national water consumption had been effectively curbed by promoting the construction of water-saving society comprehensively. The utilization efficiency of water resources had been significantly improved, and remarkable achievements had been made in water conservation in various industries. Through statistical analysis from 2012 to 2017, the total water consumption reduced from 198 m³ to 179 m³. In 2017, the water consumption per 10,000 yuan GDP was 35.6 m³, and the water consumption per 10,000 yuan of added industrial value was 22.6 m³, which was 18% and 25% lower than that of 2015, respectively. The structure of water use has become more rational. Socialism with Chinese characteristics into the new era, higher requirements on water security were put forward, water-saving work faces new situation and challenges. The main practice of water-saving work were discussed deeply in the article from policy mechanism, statistical measurement, management system, water-saving publicity, etc. respectively, and the focus and suggestions of water conservation work in the new situation was pointed out.

1. Introduction

The Party and the state have always attached great importance to water-saving, especially since the 12th Five-Year Plan, which has elevated water security to a national strategy. In order to comprehensively strengthen water resources conservation and protection, a series of decision-making plans have been issued on the implementation of the most stringent water management system[1]. In recent years, Zhejiang Province has thoroughly implemented the water control policy of "water saving priority, space balance, systematic management and two-handed efforts" in the new era, and regarded strengthening water-saving work as an important measure to promote the optimization of economic structure and the construction of ecological civilization. In the report of the Nineteenth National Congress of the Communist Party of China, it is proposed to implement the national water-saving action and take water-saving as an important measure to solve the shortage of water resources and improve the water ecological environment. The water-saving work in Zhejiang Province is facing new situation and higher requirements [2-3].

2. The main practices of water-saving in Zhejiang Province

2.1 Establishing the idea of water-saving priority

Although Zhejiang Province is a relatively water-rich region, the per capita water resources are lower than the national average, and the spatial and temporal distribution of water resources is uneven, especially it does not match the population and economic distribution of Zhejiang Province. At the same time, the economic development is accompanied by a substantial increase in the amount of wastewater, and the pressure of water environment has increased sharply. How to make the vast

cadres and masses feel the pressure of water shortage and consciously practice the "water saving priority" policy is a great test for water resources management. In recent years, Zhejiang Province has put forward the idea of "saving water means reducing emissions, promoting efficiency by saving water and benefiting people's livelihood" according to the actual situation. It has been widely publicized by the provincial government through holding press conferences, case studies, typical introductions and implementing the river governor system [4-5]. It is undeniable that the propaganda and implementation of these concepts and consciousness have played an important role in promoting the transformation from extensive water use to water conservation, enhancing the whole society's awareness of priority of water conservation, and thus enhancing the consciousness, initiative and creativity of implementation.

2.2 Improving water-saving management mechanism

In order to strengthen the leadership and overall coordination of water-saving management in the whole province, the provincial government has set up the provincial water resources management committee, established the normal operation mechanism of the Committee and its office (located in the Department of Water Resources of Zhejiang Province), promoted the water-saving of industry, agriculture, city and public institutions in an overall way, and provided a strong organizational guarantee for promoting water-saving management. The provincial government holds annual working meetings of committees led by member units and municipal governments of each district and participated by the principal heads of the water resources bureau to check the completion of the previous year's plan, deploy the work of water resources conservation and protection in that year, and ensure that the tasks are clear and responsibilities are fulfilled. Each district or county (city or district) has set up corresponding committees or leading groups, water-saving management mechanism gradually improved.

2.3 Promoting water-saving reform and innovation

As a pioneer of reform and opening up, the Zhejiang Provincial Committee and the Provincial Government have fully implemented the theory of "evacuating a cage for a new bird, phoenix nirvana" of General Secretary Xi, strengthened the differentiation and high-quality allocation of land, water and energy resources, promoted high-quality development. In recent years, Zhejiang Province has implemented the reform of "no more than one visit for one item"[6], the reform of "regional water resources demonstration + water consumption standard", etc. to promote the rapid transformation of Zhejiang's economy from quantity expansion to quality. The average added value per mu of industrial enterprises increased from 858,000 yuan in 2013 to 1037,000 yuan in 2017. The economic value created by unit water resources increased from 209 yuan to 356 yuan. The vigor of reform and innovation burst out, and the efficiency of water resources utilization increased continuously.

2.4 Optimizing water resources allocation

Over the years, Zhejiang has continuously optimized the allocation and comprehensive utilization of water resources. A large number of water diversion and water source projects have been completed. The water supply capacity of the whole province has been significantly enhanced. Basically, a water supply pattern of multi-source supply and interconnected diversion with reservoir-type water sources has been formed, effectively guaranteeing the production, livelihood and ecological water demand of Zhejiang. According to the requirements of economic and social development in the new era, Zhejiang actively carries out the research and practice of water resources optimal dispatch, and strives to improve the level of comprehensive utilization of water resources. For instance, based on the implementation of water supply with different quality, Ningbo has connected five large and medium-sized reservoirs in series and in parallel, implemented the interconnection of reservoirs, and tapped the potential of high-quality water resources. In the absence of new water resources projects, through optimal dispatch, the annual water increment of 35 million cubic meters.

2.5 Improving water price forming mechanism

In recent years, Zhejiang has accelerated the reform of water price, and successively promulgated and implemented provincial policies and measures. By the end of 2016, all counties had fully implemented the residential ladder water price system, and the water consumption of residents, especially in water-deficient areas, had declined significantly. By 2017, all counties had introduced the progressive price increase policy for non-resident over-planned water use and the differential water price policy for high-pollution and high-consumption enterprises. The implementation of these policies has effectively controlled the extensive water use of enterprises, restricted the development of high water consumption projects in water-deficient areas, and played an active role in controlling the total amount of water use, eliminating backward production capacity, and promoting transformation and upgrading.

2.6 Promoting water-saving carriers construction

Carrier construction is an important grasp of water-saving in various fields. In addition to focusing on agricultural water-saving, the provincial water resources department should give full play to the role of the working platform of the Water Resources Committee and promote water-saving in all fields. In conjunction with the Provincial Economic and Credit Commission, the Provincial Construction Department and the Provincial Water Conservancy Department, the Provincial Water Conservancy Office unified the formulation of the Evaluation Standard for Water-saving Enterprises in Zhejiang Province. Provincial Water Conservancy Department, together with Provincial Bureau of Organs Affairs, directs public institutions to establish and declare water-saving units. By the end of 2017, 101 provincial water-saving irrigation districts, 968 provincial water-saving enterprises and 269 provincial public institutions water-saving units had been constructed, which formed a good social demonstration effect.

2.7 Strengthen water-saving assessment

The provincial government has comprehensively established and implemented the most stringent assessment responsibility system for water resources management system, timely decomposition of the "three red lines" control indicators for total water use, water use efficiency and restriction of pollution acceptance in water function zones, and comprehensive establishment of water resources control indicators system at provincial, municipal and county levels. Strengthen problem orientation, pay great attention to the rectification of the problem on the basis of strict assessment. After each assessment, the province adheres to "one city one list, one city one plan, one city one summary", and incorporates the rectification into the next year's assessment. At the same time, strengthening the application of assessment results, directly incorporated the results of the most stringent water resources management system implemented by the provincial Party Committee and organizational department into the assessment of the actual performance of the party and government leading groups.

2.8 Strengthen water-saving supervision

Strict implementation of the water intake permit system, establishing and improving the water administrative licensing supervision and inspection system after the event, publishing the list of follow-up supervision responsibility for water intake permits, all water intake households with annual water intake of more than 50,000 m³ were included in provincial online monitoring. Special inspection, notification and review of water intake are carried out every year. Illegal and undocumented water intake and super-licensed water intake are seriously investigated and punished. Strict total water use management, provincial, according to the authority of approval, municipal and county levels were achieved full coverage of water intake users' planned water use management. Strengthen quota management and carry out quota rolling editing for high water-consuming industries, such as textile, printing and dyeing, and paper-making.

3. The difficulties and problems faced

3.1 Legal guarantee and system construction are not perfect yet

Water-saving work has been carried out for many years, but the legislative process of water-saving is lagging behind, the coordination and overall planning of departments are still insufficient, and many water-saving work lacks legal basis and normative guidance, which makes it difficult to effectively guarantee the objectives and effectiveness of work. The managerial personnel and technical strength of grass-roots water-saving organizations are seriously insufficient, and it is difficult to implement the responsibility and ensure the quality of work.

3.2 The control system is not perfect yet

In terms of management and control objectives, water-saving water is reflected in the calculation of indicators, which lacks the direct monitoring of target assessment, such as water quality section, land use, etc., and the intuition, effectiveness and authority of water-saving assessment are insufficient. On the other hand, the water-saving standard system is not perfect, and the top-level design needs to be improved. In the daily supervision of water resources, the water efficiency standards of domestic water-saving appliances, the scientificity and coverage of water quotas for industrial products are not enough, and the water-saving standards of various industries lack effective guidance. The system of compulsory source, process supervision and assessment criteria needs to be further established and improved.

3.3 Water-saving concept and consciousness still need to be further improved

Some municipal and county governments have not paid enough attention to water-saving work. The consciousness of water users to invest in water saving is not strong. The systematic water-saving incentives, subsidies, preferential policies and other policies are not yet perfect, and the endogenous power of water-saving has not yet been fully and effectively stimulated.

4. Countermeasures

4.1 Further improve the system of laws and regulations

Speed up the legislative process, revise and promulgate the Regulations on Water Conservation and Water Resources Management in Zhejiang Province, and improve the relevant system design, so as to provide a solid legal guarantee for water saving work in the new era.

4.2 Deeply implementing national water-saving action

According to the unified deployment of the State and provincial Party committees and provincial governments, the national water-saving action should be implemented in an all-round way, the total amount and efficiency of water resources should be strictly controlled, the rigid restraint of water resources should be strengthened, water-saving in agriculture, industry and cities should be further promoted. The construction of water-saving society at county level should be accelerated on the basis of existing conditions, and the coverage of various water-saving carriers should be continued. Continue to deepen the reform, adapt to the government's digital transformation reform, strengthen departmental coordination, break the information island, and accelerate the pace of digital and information-based water-saving reform.

4.3 Further strengthen water-saving supervision

In accordance with the general requirements of the Ministry of Water Resources for “strong supervision of water industry”, adhere to the problem-oriented and goal-oriented, the Provincial Water Resources Department carries out a special survey on water conservation work in various places, focusing on the implementation of water conservation planning system, planning water resources demonstration, planning water regulation, water resources fee collection and use, and so on, to solve or mitigate the problems such as unclear responsibilities, inadequate personnel and

technical force, inadequate coordination among departments, and imperfect incentive mechanism for water-saving. Strengthen water-saving supervision and promote the implementation of water-saving policies

Acknowledgement

This research was supported in part by the National Nature Science Foundation of China (51709237), The Science and Technology Plan Project of Department of Water Resources of Zhejiang Province (RA1603), Projects Supported by Zhejiang Provincial Scientific Research Institutes (2017F30006) and National Key R&D Program of China (2016YFC0401603).

References

- [1] Chinese State Council, Opinions on implementing the strictest water resources management system. http://www.gov.cn/zhuanti/2015-06/13/content_2878992.htm, 2015.
- [2] Xi J P, Liu Y S, et al. Tutoring book of the 19th CPC National Congress Report. *People's Publishing House*, Beijing, 2017.
- [3] Wang H, Liu J H. Studies on key measures of National Water Conservation Action in the new era. *China Water Resources*, 6: 7-10, 2018.
- [4] Jiang B. Considerations for Leader Responsible System in governance of rivers and lakes. *China Water Resources*, 21: 6-7, 2016.
- [5] Pan T M. Implementation of river governor system and the plan of five water categories in Zhejiang Province, *Water Resources Development Research*, 10: 35, 46, 2014.
- [6] Yu J X, Gao X. Experiences and prospects of “No More than One Visit for One Item” government reform in Zhejiang Province. *Zhejiang Social Sciences*, 4: 76-85, 2018.