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Importance of Multiple Properties of Water Conservancy and Construction of Water Conservancy Long-Term Mechanism——Study of Water Development Dilemma and Thinking

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Abstract Since the construction of new socialist countryside, "agriculture, rural areas and farmers" have been in the pivotal development period. As the all-around transition and progress of our society, water conservancy construction and other rural public facilities and services seriously lag behind, and it has restricted the formation of long-term mechanism for water conservancy development and brought hidden trouble to harmonious countryside. Based on the great changes of traditional rural areas in politics, economy, society, humanity and ecological, we firstly analyze the status quo of agriculture, rural areas and farmers, then discuss the multiple attributes of water conservancy to construct the long-term mechanism for water conservancy development.

Key words New countryside, Water conservancy development, Social capital

The eighth "No. 1 Document" in the new century focuses on agriculture, rural areas and farmers again, in which China makes the overall arrangement for water conservancy work firstly since the foundation of New China, so that the whole society focuses on water conservancy development. In vast rural areas of China, there exist many problems in water conservancy and development, such as large area, long route, many points, complex facts, difficult construction and management. Moreover, water conservancy facility construction is a project of vital and lasting importance, and the quality should be considered firstly. In this study, to efficiently construct the long-term mechanism of water conservancy development, starting from the trust of rural communities, we discuss the functions and characteristics of rural trust and its roles in the long-term mechanism of water conservancy development, especially the role of arousing farmers' enthusiasm, initiative and creativity (farmers are the main body of water conservancy construction and development).

1 A brief review of the achievements of agriculture, rural areas and farmers

In 1982, China fully carried out the household contract responsibility system, and civilians' vitality and potential have been released firstly, so that the face of our motherland has been changing with each passing day. The policy returning land for farming to forestry, lakes and grass was implemented in the central and western regions of China in 1998, marking the settlement of Chinese food problem. To increase total grain yield, Chinese people try to improve grain yield per unit area instead of excessive reclamation

and reclaim farmland from lakes. China abolished agricultural tax in 2006, showing that national construction has not depended on agriculture, and farmers' burden has been reduced greatly. Meanwhile, the contraction between the state and farmers has been relieved effectively, and it is called the third reform of Chinese rural areas. However, before traditional "three rural" issues have not been solved completely, "new three rural" issues have appeared with the acceleration of industrialization, urbanization and marketization process, and they link cities with rural areas. Moreover, these issues show old "three rural" issues directly, which imply a series of multiple social backgrounds and factors. Most importantly, China should consider equitable distribution of rural public resources, services and goods, and make the continuous eight "No. 1" documents produce strong durative action and power. Though the eight "No. 1" documents have different focal points, they aim to remove differences between urban and rural areas and promote urban and rural development. At present, water conservancy development and construction is the big background under the effect of old and new "three rural" issues.

2 Status quo of water conservancy development

From the macroscopic view, China has a shortage of water, and has suffered extremely water pollution. Moreover, the utilization rate of water resources is low in China. On the whole, water conservancy and construction has seriously lagged behind national economic and social development. Seven big water systems and 231 rivers have been polluted, and bad water quality has affected rural development and new rural construction.

2.1 Total quantity of reservoirs are large, but there are many dangerous reservoirs Since industrial civilization, the human race has used water resources and resist floods mainly through building dams along rivers. Up to the early 1970s, about 0.17 million reservoirs had been built in China, but most of these

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reservoirs had been abandoned in the early 1990s. Among the 87 000 reservoirs issued at the water resources conference in 2011, dangerous reservoirs account for about 33%. The quantity of reservoirs ranks first in the world^[1].

2.2 Large quantities of water conservancy projects serve the broad masses widely In China, agricultural problem refers to water problem to a certain degree. Current water conservancy projects serve the broad masses widely, especially farmers, agricultural production and rural development, such as irrigation and drainage engineering, hillside protection engineering, small hydropower stations and so forth.

2.3 Involving many fields and aspects Water conservancy development involves political, economic, social and scientific field, covering human production and life as well as global ecology. Besides, the control mode is based on social science and interdisciplinary science instead of natural science.

2.4 There are a variety of projects, and nonprofit and operating exist at the same time As people have deeper knowledge of water, they did not think that water is a kind of free public good, and it is inexhaustible like sunshine and air. Water conservancy facilities have both nonprofit and operating in the same water conservancy project. For instance, the big water conservancy project Three Gorges Project has commonweal effects on ecology, and it has an operational character in power generation and irrigation.

2.5 Great regional difference In view of China's terrain characteristics, South China mainly prevents floods, while North China mainly resists droughts. However, as the aggravation of bad weather all over the world in recent years, South China and North China have suffered droughts and floods at the same time. Especially at the end of spring and the beginning of summer in 2011, China suffered a shocking drought and subsequent big rainstorm. It fully revealed the vulnerability of water conservancy system and other public systems as well as the poor efficiency of water conservancy long-term mechanism.

2.6 Shortage of water resources and serious water pollution In China, the average amount of water resources per capita is 2 300 m³, accounting for 25% of the world average. In 2030, China's population may reach 1.6 billion, so the average amount of water resources per capita will be only 1 760 m³, which is close to the internationally recognized warning line (1 700 m³)^[2]. More seriously, the seven big water systems and 231 rivers in China have been polluted at present, directly influencing the quality of human life and biodiversity.

2.7 Extensive water use structure and mode as well as vulnerable water environment So far, domestic, industrial and agricultural water account for 10%, 20% and 70% of total quantity, so water use ratio is 1:2:7. Agricultural problem mainly refers to water problem to a certain extent^[3]. Water conservancy is the most important condition for modern agricultural construction, the irreplaceable foundation support for economic and social development, and the system for improving ecological environment.

Moreover, speeding up water conservancy reform and development concerns the security of flood control, water supply and grain, as well as economic, ecological and national security, which was proposed firstly in the "No. 1 Document" in 2011. At present, national water use structure has not been reversed fundamentally, and China will go a long way towards building a water-saving society^[4].

3 Analysis on the water conservancy facilities and management mechanism

3.1 Composition of water conservancy facilities During the fully transform of society and economy, water conservancy facilities for water conservancy reform and development include flood and drought mitigation system, major river control and farmland water conservancy construction system, small-scale reservoir reinforcement and flood forecasting and warning system, rational allocation and efficient utilization system of water resources, water resources protection and river and lake health security system, scientific water conservancy development system, scientific water resources management system, stable growth mechanism of water conservancy input, water price formation mechanism, normal operating mechanism of water conservancy projects, and so forth.

3.2 Characteristics and economic explanation of water conservancy facilities and mechanisms In economics, consumer goods can be classified into private goods and public goods according to the competitiveness and exclusivity of consumption. Private goods have full competitiveness and exclusivity of consumption, and quasi-public goods have one of the two characters, while other consumer goods are pure public goods. According to the characters of quasi-public goods, the goods can be divided into two types. The quasi-public goods with the competitiveness of consumption are called public resources. This kind of competitiveness means that public resources belong to their occupants, and excessively consuming public resources will result in exhaustion and damage of public resources, which can be called "Tragedy of the Commons" proposed by an American scholar in 1968^[5]. The quasi-public goods with the exclusivity of consumption are called fee-based products. In respect of water conservancy facilities, all water conservancy facilities are quasi-public goods, such as the project for diverting water from the south to the north, Three Gorges Project, and they are national people's public goods to a certain degree. In economics, the management system, mechanisms and laws of water conservancy development do not have competitiveness and exclusivity, so they are pure public goods.

In 1937, the founder of property rights economics R · H · Coase proposed the core problem of property rights in his famous work *Nature of an Enterprise*, namely transaction cost as well as the first and second Coase theorem, and they provide theoretical bases for the problems of public and quasi-public goods; transaction cost theory has greatly affected the development of public policy science^[6]. From these theories, we know that the generation of a policy or system originates from the reduction of transaction cost.

The school of institutional analysis plays more important roles in the study and analysis of public policy, and provides references for water conservancy development and construction.

3.3 Water conservancy should not be superstitious about market force

In view of the great achievements obtained since the reforming and opening, famous economist Zhang Weiying suggests that market economy is the best system in human history. However, according to new institutional economics, the market can not solve "Tragedy of the Commons", not to mention complex, diverse and regional China's water conservancy. The long-term mechanism of water development depends on the roles of the market, and it is closely related to farmers. Farmers' initiative, economy and creativity will determine the practice process and direction of water conservancy construction in China.

4 Necessity of needing trust for constructing water long-term mechanism

4.1 Effects of China in transition on communitarian The transition of survival mode and life style has appeared in both rural areas and cities. Facing urbanization and new countryside construction, trust, the old and evergreen proposition, also shows new characteristics. According to the data of National Bureau of Statistics of China in 2010, urban population has been close to 0.666 billion, accounting for 49.68% of total population of China. In the next 20 years, more and more people will live in cities. More residents in rural areas will live in the harmonious communities of the new countryside. Traditional trust between acquaintances has become fragile in rural areas. In fact, there were two kinds of order or power in traditional Chinese society. One is "bureaucracy" order or national power, while the other is native order or folk force^[7]. In the new countryside, especially in Henan, Sichuan, Hunan and other big provinces with large quantities of migrant works moving outwards, hollow villages and villages only with old people can be seen everywhere. Though most people do not agree that traditional villages have subsided completely, it is undeniable that traditional villages are really full of holes^[8]. That is to say, in vast hollow villages and villages only with old people and children, trust between acquaintances has hardly support water long-term mechanism during the new countryside construction. Chinese people underwent a crisis of faith, a crisis of belief, and another crisis of faith, so that suspicion and vigilance have become a way of life. In addition, the prosperity and development of the country need large-scale complete trust, not to mention water conservancy development. In fact, it has a long way to go to build large-scale trust in current atomized rural areas.

4.2 A need for community harmony in the new countryside

It is generally known that the concept community was proposed firstly by German sociologist Ferdinand Tonnies in 1887^[9]. He suggested that characteristics of interpersonal relationship and social integration mode had changed greatly after the transition from traditional rural society to modern commercialized society. "Community" mainly existed in traditional rural society, and its inter-

personal relationship is based on natural will, while consanguinity, affection, common faith and ethics linked people together. On the contrary, "society" is formed based on individual will, rational contracts and the law, lacking affection exchange and care among people. In the society, contractual relationship and other secondary relationships had become dominant forms in human communication. In the world, community has become a common object studied by scholars in political science, sociology, anthropology and management field. To coordinate with the reform of the economic system and construction of social security system, the Ministry of Civil Affairs firstly led "community" into working practice in 1986^[10]. As the rapid development of the new countryside and urbanization construction, new rural communities like Huaxi Village, Jiangsu Province as well as urban communities can be seen everywhere, and show a variety of characteristics different from western communities. Additionally, exploring the management and construction of "community mode" in the new period is a challenging and stirring subject.

5 Several ideas about the long-term mechanism of water conservancy development

5.1 Trust begins from myself and concerns everyone's interest

Trust is the product of repeated games among community members in long-term social interaction, as well as the result of internal interaction among members of social networks. In order to effectively avoid prisoner's dilemma that provides theoretical analysis base for the solution of the problem above, every community member ought to trust from myself, and interest is needed for people, and it is a direct performance of social relation and economic relation. Social harmony mainly refers to harmony of interest relationship, and interest fair and community trust are important marks of harmonious society. Water conservancy development concerns to everyone's interest in rural communities, and farmers' initiative will determine the interactive effectiveness of stakeholders like governments, agencies and volunteers, and large-scale social capital forming based on trust will become the soul of water conservancy development and construction in building the long-term mechanism of water conservancy development.

5.2 Cultivating the shared value of rural communities based on a high degree of trust

Under the emotional bond of shared value in communities, attitude of social interaction, value psychology and cultural mode can generate spontaneously, but the shared value based on current rural conditions is very fragile. Cultivating the shared value of rural communities is an essential way in the period with market out of order, government withdrawing and disintegration of many farmers' cooperative organizations. Therefore, it is necessary to cultivate the shared value of rural communities based on a high degree of trust in the long-term mechanism of water conservancy development, and we should construct the long-term mechanism of water conservancy development as early as possible, creating the new situation of water conservancy development.

3.4 Helping farmers become rich depending on science and technology

Implementation of spark program can improve farmers' ability to increase income relying on science and technology. In 2012, farmers' per capita net income was 11 915 yuan in Quanzhou City, 1.5 times as higher as farmers' per capita net income of China (7 917 yuan). Anxi County implemented spark program to make farmers rich, and it developed specialty industries like Tieguanqin and Wulong tea. Annual per capita net income of tea farmers was more than 10 000 yuan, and tea farmers whose annual per capita net income exceeded 0.1 million yuan accounted for 30%. Dehua County also implemented spark program to promote agricultural development, and built 310 farmer cooperatives, developed agricultural specialty industries to spur 18 000 households to increase income, and its output value reached 0.506 billion yuan in 2012.

Quanzhou City of Fujian Province has implemented spark program for 26 years, and the program has play an important role in new rural construction in west bank of Taiwan Strait. Practice shows that spark program is an effective way and an important platform for agricultural sci-tech work, and it leads and promotes new rural construction. The "Twelfth Five-year Plan" period is the key to the building of a well-off society in China and the development of modern agriculture. The fundamental way out for agricultural development lies in scientific and technological progress, so we must insist on prospering the agriculture with science and education and

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