

Building Long-term Mechanism of Water Conservancy Development Based on Trust in Rural Communities

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Abstract Current situations of water conservancy development in China include: there is serious water shortage and pollution; total water reservoir capacity is large but most are dangerous reservoirs; water is widely distributed and directly serves the masses; business is comprehensive and many fields are involved; projects include public welfare and operating types; great regional difference and problems are varied; utilization methods are extensive and water environment is vulnerable. Based on these situations, this paper analyzes the public goods feature of water resource facilities and management mechanism, and points out that water conservancy development should not merely depend on the market force. Then, it discusses that the influence and trust of transformation period on the whole social members are requirements of new harmonious rural communities, and expounds the necessity of trust for building long-term mechanism for water conservancy development. Finally, it presents policy suggestions: trust is closely connected with benefits of every person, thus developing community trust should begin with every individual; building long-term mechanism for water conservancy development should rely on cultivating highly trust-based rural community shared values.

Key words New countryside, Water conservancy development, Social trust

In 2011, "No. 1 document" of the central government focused on the issues concerning agriculture, countryside and farmers, and firstly overall planning for water conservancy works since founding of new China in 1949, making water conservancy development become a major concern for the whole society. Contrary to comprehensive transformation and progress of the society, rural public facilities and services such as water conservancy construction seriously lag behind. Along with the whole society valuing and investing much in water conservancy development, it is extremely important to establish a long-term mechanism. In line with tremendous changes of traditional political, economic, social, humanistic and ecological features in rural areas, it is believed that building rural community trust is a key part in overcoming difficulty of water conservancy development. We should bring into full play the bridge and tie function of long-term mechanism of water conservancy development.

1 Current situations of water conservancy development

1.1 There is water shortage and serious water pollution

In China, there are problems of serious water shortage, serious water pollution, and low water resource utilization efficiency. The water resource available per capita in China is only 2 300 m³, about 1/4 of the world average level. It should be specially noted that by 2030, Chinese population may reach 1.6 billion, then the water resource available per capita may be only 1 760 m³, close to internationally accepted alarm level (1 700 m³)^[1]. The water conservancy construction seriously lags be-

hind national socio-economic development. All the seven river systems and 231 rivers are polluted, which directly influences quality of people's living and biological diversity.

1.2 Total water reservoir capacity is large but most are dangerous reservoirs Since the industrial civilization, major methods of human utilizing water resources and fighting against floods have always been dam construction in river courses. After new China is founded, water conservancy construction accumulates great achievement. By the beginning of the 1970s, China has built over 170 000 reservoirs. However, by the early of the 1990s, most of these reservoirs have been abandoned. Among 87 000 reservoirs announced at the central water conservancy working conference in 2011, about one thirds are dangerous^[2].

1.3 Water is widely distributed and directly serves the masses Since water conservancy projects in China are widely distributed, they are closely connected with production and living of the broad masses, especially farmers, agricultural production and rural development. In China, the agricultural problem, to a certain extent, is the problem of water. The development of water conservancy covers construction and management of rivers, lakes and seas, pump stations, motor-pumped wells, irrigation and drainage works, slope protection works, drainage works of torrential floods, small power station projects, etc.

1.4 Business is comprehensive and many fields are involved From the beginning to the end, the water conservancy development involves political, economic, social and scientific fields, covers big ecology of production, living and survival of mankind, so it is impossible to achieve improvement just relying on a field. Administration methods are also comprehensive, from natural science to social science, and interdisciplinary science.

1.5 Projects are various and include public welfare and operating types

Along with deepening of understanding of water, water is no longer deemed as free public goods like sunshine and air. In different conditions, water conservancy facilities show both public welfare and operating. For example, the Three Gorges Project is public welfare in ecological influence, but also operating in power generation and irrigation.

1.6 Great regional difference and problems are varied

Features of terrain in China cause that works are mainly flood prevention in south and drought fighting in north. However, along with deterioration of global harsh weather conditions in recent years, flood and drought coexist in north and south. Especially in the period between spring and summer of 2011, the terrible drought and the following extra torrential rain made China experience both drought and flood. Now, we are suffered from flood after drought, and the flood situation becomes increasingly serious from rural to urban areas. Frequent occurrence of floods, waterlog, and droughts directly reveals vulnerability of public system such as water conservancy and water disaster prevention and reduction, and low efficiency of long-term mechanism of water conservancy.

1.7 Utilization methods are extensive and water environment is vulnerable

At present, the proportion of water utilization in China is 1:2:7. Or specifically, domestic consumption takes up 10%, industrial consumption accounts for 20%, and agricultural consumption takes up 70%. "Water is source of life, essential of production, and basis of ecology." "The agricultural problem, to a certain extent, is the problem of water." Water conservancy is an indispensable condition for modern agricultural construction, irreplaceable basic support for socio-economic development, and an inseparable safeguarding system for improvement of ecological environment. Minister of Water Resources, Chen Lei, once stated that water has strong public welfare, basic and strategic features. By now, the water utilization structure has not been changed fundamentally, and there is still a long way to go from the water-saving society^[4].

2 Analysis of public goods feature of water resource facilities and management mechanism

2.1 Composition of water resource facilities In the course of comprehensive socio-economic transformation, water resource facilities for water conservancy reform and development include: flood prevention and drought fighting system; control system for great rivers and lakes; farmland water conservancy construction system; small reservoir risk-removal and reinforcement, and early warning system of mountain torrent disaster; reasonable allocation and high-efficiency utilization system of water resources; water resource protection and river and lake health safeguarding system; scientific development system of water conservancy; scientific water resource management system; stable growth mechanism for investment in water conservancy; pricing mechanism for water resource conservation and reasonable allocation; and sound operation mechanism for water projects.

2.2 Features and economic interpretation of water resource facilities and mechanism

In economics, the consumer goods can be divided into private goods and public goods according to rivalry and excludable characteristics. Goods with complete excludable and rivalry are private goods; goods with only one of these features are quasi-public goods; goods without any of these features are public goods. Specifically, quasi-public goods are excludable and rivalry in consumption and certain externality. According to characteristics, the quasi-public goods can be divided into two types: one is rivalry but non-excludable, this type of quasi-public goods is called public resource. This rivalry feature means "goods belong to the person who possesses them". If the consumption is not stopped effectively, it will lead to exhaustion of resources and damage of public resources, or "Tragedy of the commons" described by American scholar Hardin in 1968. The other type of quasi-public goods is excludable but not rivalry. This type of quasi-public goods can be called chargeable products, and can be subdivided into two types. One is club product. In certain consumption capacity, once the critical point is exceeded, the non-rivalry will disappear and congestion will appear, leading to rise of marginal cost of extra consumers. The other type needs supply of collective action. Along with increase of consumers, the cost of each consumer will decrease, so it will be maximally economic if the goods are provided by one supplier, for example, communication network. This type of goods is called natural monopoly products or public welfare products.

As to water resource facilities, measured by rivalry and excludable standards in economics, nearly no water resource facility belongs to private goods in daily life and social activities. All water resource facilities are quasi-public goods, such as "South-to-North Water Diversion Project", "Three Gorges Project", to some extent, also belong to public goods for national people. From the viewpoint of economics, the management system, mechanism, laws and regulations of water conservancy development show typical excludable and non-rivalry, so they are pure public goods.

In his book *The Nature of the Firm*, R. H. Coase stated that system or policy originates from reduction of transaction costs, it can coordinate organizational behavior to move towards fairness, good order and security, and make us understand characteristics and necessity of public policies from another point of view^[6]. On this basis, system analysis school is formed and plays a more and more important role in research and analysis of public policies. Besides, it also provides reference for water conservancy development and construction.

2.3 Water conservancy development should not merely depend on the market force

Remarkable achievements since reform and opening-up, described by famous economist Zhang Weiyong, prove that the market economy is the best system since the dawn of human civilization. However, the new institutional economics has repeatedly warned the society of the thing that the market can't solve the "Tragedy of the commons", let alone the complex, diverse and distinctive regional public goods and semi-public goods feature of water conservan-

cy in China, even it has the feature of private goods. Expert Li Changping states for many times that water conservancy should not completely depend on market. The long-term mechanism of water conservancy development cannot be separated from market function, but it is more closely connected with farmers. The initiative, economic and creativity of farmers will determine progress and trend of China's water conservancy construction.

3 The necessity of rural community trust for building long-term mechanism for water conservancy development

3.1 "Trust crisis" appeared in the course of transformation in China Along with rapid economic development, China is stepping into the transformation period. The influence of social transformation covers lifestyle, rural areas, and urban areas. In rural areas, the traditional sounds of crowing cocks and barking dogs are basically not heard, and the trust in traditional acquaintance society is becoming very vulnerable. The traditional rural area features the imperial power never devolved below the county level, depending on clans below the county level, clans exercise autonomy, autonomy relying on ethics, and ethics creating squires. It further summarizes that in traditional Chinese society, there are actually two kinds of orders and forces. One is "official system" order or national power, the other is rural order or folk force^[7]. In the course of new countryside construction, especially Henan, Sichuan and Hunan provinces which have rich source of migrant workers, hollow village and old people village are everywhere, it is hard to find the mark of acquaintance society. Then, the academic circles call current rural areas "semi-acquaintance society", and most scholars do not agree with the opinion that traditional villages have completely collapsed. Nevertheless, it is undeniable that the traditional rural areas are indeed riddled with gaping wounds^[8]. In other words, in vast hollow villages, old people villages, and children villages, small-scale acquaintance trust is hard to support the modernization undertaking such as long-term mechanism for water conservancy development in new rural area construction.

The whole society is full of material desire, perverted and confused values, loss of belief, perplexed spirit, rife vulgarity, demoralization, distorted human nature, lagging of system, separation of benefit, and difficulty to reach common understanding. Social transformation makes people experience "belief crisis", to "faith crisis", then to "trust crisis", and suspicion and vigilance become one of the type of lifestyles. Sun Yat-sen once said that "a nation is composed of its people, while the people are dominated by their heart". Thus, the development and prosperity of a nation depend on extensive and great trust. This long-term mechanism of water conservancy development also depends on extensive and great trust. However, in current rural areas, we shoulder heavy responsibilities for building extensive and great trust.

3.2 Trust is the requirement of new harmonious rural communities The concept of community is firstly introduced by German socialist Ferdinand Tonnies in his book *Community*

and Civil Society in 1887^[9]. In his opinion, after the transition of traditional rural society to modern commercialized society, features of interpersonal relationships and way of social integration have great changes. "Community" mainly exists in traditional rural society, and it is a kind of social organization where each member has close relation, mutually trusts each other, assists with each other and has genuine human interest. Its interpersonal relationship is a kind of relationship based on ancient natural willpower, the tie connecting people is consanguinity and feelings, common belief and ethics. In the world, the community has become a common research object of political science, sociology, anthropology, and management science, etc. In China, the Ministry of Civil Affairs firstly introduced this concept into actual work, to cooperate with the economic system reform and social security system construction^[10]. Along with rapid development of new countryside construction, the new rural communities like Huaxi Village in Jiangsu Province can be seen everywhere, and they take on many characteristics of western communities. Therefore, it is of the utmost importance to explore management and construction ways of "community model" and build rural community trust in new period.

4 Suggestions about how to cultivate rural community trust for building long-term mechanism for water conservancy development

4.1 The trust is closely connected with everyone and cultivating community trust should begin with every individual Trust is the result of long time of social interaction of social members, and also the result of internal social interaction of members of social relationship network. The "Prisoner's Dilemma" analysis and "Game Theory" provide theoretical analysis basis for solution to this problem. To effectively avoid the prisoner's dilemma, every social member should begin with himself. The benefit is demand of people for certain object in the world around, and is the direct manifestation of social relationship, mainly economic relationship. Karl Marx said that "everything people strive for is connected with their interests". Lenin considered the interest as "the most sensitive nerve in people's life". Social harmony is mainly the harmony of interest relationship. Interest fairness is an important mark of harmonious society, and it is also just like this for community trust. Water conservancy development is closely connected with everyone. Thus, the enthusiasm and initiative of farmers will directly determine the effect of interaction between organizations at interest in construction of water conservancy development, such as government, organizations and volunteers. Besides, the large-scale social capital formed on the basis of trust will play the role of soul in water conservancy development and construction in building long-term mechanism for water conservancy development.

4.2 Building long-term mechanism for water conservancy development should rely on cultivating highly trust-based rural community shared values It is not easy to solve complex

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problems, like water conservancy development. Based on affectional bond of social common value, the social interaction attitude, value mentality and cultural model will come into being spontaneously, but the common value based on current overall rural situations is extremely vulnerable. Cultivating rural community common value is an indispensable section in this period of market failure, government withdrawal and disintegration of many farmers' cooperative organizations. Thus, it is required to value the cultivation of rural community common value based on trust, and build long-term mechanism of water conservancy, to welcome new phase of water conservancy development.

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