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Research on Management Mode of Small-scale Irrigation Works for Farmland Based on Self-governance

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Abstract The paper analyzes the practical use of management mode of small-scale farmland irrigation works in China, and studies various problems existing in the present management mode. It puts forward a mode named Water-consumer Association which is the most practical one at present. It points out some rules which must be mastered in solving problems appearing in using this mode.

Key words Farmland irrigation works, Management mode, Self-governance, Water-consumer Association

1 Introduction

Small-scale farmland irrigation works are in charge of delivering water to farmland, which are called the last kilometer. They have direct influence on agricultural activities because of their abundant spots, wide supplying and gigantic amount. Most of small-scale farmland irrigation works in China were built from the 1950s to 1970s. Because of the low techniques and poor economies at that time, the construction was dominated by labor with low standards. Most projects were not well equipped and the economic life span of the projects was short. Many projects are seriously damaged, which results in great loss of irrigation abilities and cannot meet the needs of normal agricultural requirements. The backward condition of the irrigation works has affected the agricultural output and the benefits of farmers seriously, which further threatens the national food security of China.

2 The present management mode of small-scale farmland irrigation works

2.1 Contracted management mode Contracted management mode is a kind of mode which chooses contractors on the premise that the property ownership is fixed according to rules of separating ownership from management, the total investment of the project and the ability of water supply. Or it carries out competitive bids to contract out rights of using, managing and profiting of water conservancy facilities. Contractors must finish the water-supplying tasks and the maintenance of facilities in time according to contracts. This kind of mode is based on contracts, which clearly define rights, obligations and responsibilities of both parts. And at the same time, it needs the corresponding standards of tasks and

asks for self-operation and being responsible for gains and losses.

2.2 Renting management mode Renting management mode rents rights of management with unchangeable ownership. Renters take charge of maintenance, repairmen, operation and management of water conservancy projects. Renting management mode is one of methods of optimizing water resources assets under the marketing economy. It attracts individuals easily by its flexible tenancy, investment and little constraints. Renters should pay a certain amount of rent. During the process of management, they should invest money for maintenance and repairmen of the original project. Rights of renting can be inherited, but not be transferred. It is an appropriate mode fit for some basic projects and it is difficult to attract more capital to repair and equip more advanced facilities. It is not a good one to attract more farmers to get involved in construction and management.

2.3 Auction management mode It is also known as bidding contract. Ownership of projects belongs to village groups or county groups. On the premise of unchangeable ownership, it auctions rights of management off in a certain period through public bidding according to the rules of separating ownership from rights of using. The staff and farmers can join in auction and sign contracts to be new-managers. However, small-size reservoir located at the upper part of villages and responsible for flood controlling cannot be auctioned off. The present projects which can be auctioned off are pools, tanks and wells.

2.4 Joint-stock management mode Joint-stock management mode is aimed for small-size profitable irrigation works and adopts methods of combining stocks and cooperation. It manages these small-size irrigation works just like enterprises. This kind of mode divides small-size irrigation works into several smaller parts in the form of stocks and then sells them to water consumers and other people according to their willingness. It involves in a part of social members based on cooperation. It is flexible because capital and materials are both ok in ways of investment.

2.5 Water-consumer association management mode Water-

Received: April 21, 2016 Accepted: June 18, 2016

Supported by Provincial Water Conservancy Research and Technology Promotion Project; Research on Key Technical Problems of Farmland Water Conservancy Projects in Shandong Province (SDSLKY201401).

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consumer association management mode is an organization involving legal qualification. It is established by negotiation and selection of water consumers in the same or several irrigation works. After the permission of management department of irrigation works, rights of maintenance of projects are transferred to associations with clarifying the public non-profitable nature. It is not secondary to irrigation departments, but partners work on water goods. Farmers' association is a irrigation organization managed by themselves. Serious problems are discussed and solved by committees at meetings which embody farmers' active involvement and supervision in management. Through years of practice, the above 5 modes are representatives of small-scale farmland irrigation works and major forms of irrigation works. They play important roles in reforming irrigation works and make great progress.

3 Problems in the present mode

3.1 Problems in contracting, renting, auctioning and stock-operation

(i) Narrow profits and conflicts difficult to solve. The reason why the manager invests is to gain profits. In order to reduce farmers' burden, the government manages price of agricultural water. In pricing water, standards are much lower and there is no compensation which result in little profit or non-profit in managing irrigation works. Even though in pricing several items the government is not involved, farmers fail to afford the expenses because of low income of agricultural products and high water costs. In order to carry on the projects, managers are reduced to lowering water price which leads to unreasonable interests by relying only on irrigation works. To gain more interests, managers have to operate some value-added projects which are irrelative to irrigation works. These value-added projects are contradictory to agriculture irrigation, which brings bad effects on agricultural output. (ii) Natural price-fixing of irrigation facilities, hard to constrain the illegal actions of managers. Because it is hard to get profits through the common irrigation works, many managers choose to emphasize other value-added projects, such as aquaculture, which leads to careless maintenance and operation of delivery pipes and equipment. This behavior is hard to constrain. What's more, some managers reap profit by price-fixing which seriously damages farmers' rights.

3.2 Problems in water-consumer association mode

(i) Administrative interference. Water-consumer association, a legal organization, should have been qualified with independent management and operation. While in daily routines, for example, in maintaining projects and charging water costs, it is easily mixed with village committees and the county government. So it is hard for them to work independently, killing creativity and vitality of water-consumers association to a certain extent. (ii) Inadequate involvement of farmers. In some local places, most participants in electing directors of associations who should have been chosen among farmers are village leaders. Even some farmers know little about election or take no part in election, which seriously damages

farmers' rights of supervision and being informed. (iii) Differences between irrigation zones and administrative zones. There are vast differences in land appearance in China, different natural scenery and water resources. Judging from what we have known, most associations are established according to water zones. So there are differences of natural scenery, water needs and administrative zones among counties, towns and villages, which results in complicated irrigation conditions and difficult cooperation. (iv) Large scale of local associations. Local associations are established according to administrative villages. They are featured with excessive staff, no classifications, difficulties in solving problems and being united. All of which result in failure in activating farmers' involvement of association. (v) Lack of operation funds. Association funds come from water fees. It is hard to operate association because of limited water fees and difficulty in maintaining daily operation of irrigation works.

4 Theoretical existence of water-consumer association

Water resources are characterized by easy acquisition and competition in using, while rights of ownership are not clearly defined, which leads to overusing. Water resources in agriculture, no matter how they are collected, achieved or stored, delivered, need tanks, wells, banks and irrigation channels. These facilities are exclusive and non-competitive while economic demands of irrigation facilities are price-fixing. Farmers cannot afford to build and maintain the irrigation facilities which call for collective supports, and then water-consumer resources appear. In rural areas of China, farmers are so poor that many activities need cooperation to finish. The public should attach importance to cooperation. People who do not obey rules damage reputation and no one would like to cooperate with them. Their long-term rights cannot be guaranteed. In order to ensure the smooth progress of agricultural production, agricultural irrigation is a must and should be carried out in a long term. For those who live on agricultural production may search for profits of long-term irrigation. Because agricultural irrigation is a repetitive bet, each involved person should take into consideration the long-run benefits and cooperation is the best choice which makes the existence of water-consumer association possible. Each person will obey the public rules because of constraints of personal reputation and long-term profits. So water-consumer association will exist in a long term. Reputation mechanism is an informal rule constraining every beneficial farmer in an area, which plays an important part in keeping farmers from opportunism to realize cooperation, supervision and lowering conflicts among farmers. Olson thinks when the scale of association is small, rules among members can be easily observed and loss could be great if someone violates rules. Members are closed with low cost of negotiation. Therefore, to those small associations, there is no need to adopt hard methods to organize collective activities. However, the larger the scale is and the more members it has, the fewer benefits each member will get, the more difficult to calculate the corresponding

benefits, the bigger possibilities of opportunism it has and the further it is from optimization.

5 Management mode of irrigation works based on self-governance small-scale farmland

Through comparison and research on various types of farmland, we think, at the present stage of agricultural production in China, water-consumer association is an advanced policy suitable for China. The association can be better improved through solving some problems existing at present. Rules can be followed in establishing and operating water-consumer association. The first is to define clearly the participants. The same water channel cannot be divided into different associations which should have clear classification. Associations usually are divided according to sub-channels, each channel may be an association. If the irrigation scale is large, it is divided into two or more associations. The scale of an association should not be large. The smaller the association is, the easier united the group is and the more efficient in management. We can refer to the most advanced irrigation management mode, Moseph in Israel, which have 40 to 50 associations. According to the practical situation in rural areas in China, water-consumer association should start from the smallest-scale organization which is the basis of larger organizations. The scale will become larger and larger on the basis of good operation, accumulated capital, improvement of economy and policies. The second is the graded management system. In the same association, it is necessary to establish graded management system according to the practical boundary. The adopted rule is to satisfy the common benefits of members as many as possible, which is good for cooperation. The third is that water consumers get involved in improving and modifying rules and enjoy their rights. Members are relative to each other because of the origin and they are dependent on each other. The relationships will last long and not change at the moment. Therefore, in formulating and operating rules, they will measure benefits in a long term. Besides, they are familiar to the local situations. So, it is the best choice for them to make rules. The fourth is that the government should support and ensure the rights of association. The national finance support for irrigation works should be allocated among associations, avoiding money-withholding and defaulting. Associations should enjoy rights of pricing and water charging. The financial aids for small-scale farmland should reduce the middle steps as many as possible and it should be handed into association directly. The rules and policies inside the association should be dis-

cussed and decided by group members. The government may make rules but it is forbidden to interfere by force. Only if members are sure that their rights are guaranteed, their contribution to making and designing rules is not weakened can negotiation work. Because members are familiar with each other, it is not necessary for others who know little about the local to get involved in to make rules.

6 Conclusions

Water-consumer association is an advanced management mode. It realizes the good cycling of economy by self-governance of farmers and ensures sustainable development of irrigation works. It succeeds all over the world and it makes great progress in China. Although there are some problems at present, it will generate more social and economic benefits after our careful studies.

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