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Water user associations in Inner Mongolia: Factors that influence farmers to join

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ABSTRACT

Irrigation districts in Inner Mongolia face problems that are familiar to irrigation areas around the world: shortage of water resources, poor management of water, inefficient use of water resources, and imbalance of financial revenues and expenditures. Water user associations have been promoted to address water supply problems and to encourage efficient water use. In this study, farmers from three distinct areas in Inner Mongolia were surveyed to determine their level of understanding of water user associations and the factors that affect their becoming members. A majority of respondents thought that water user associations were useful to safeguard farmers' interests, to help reduce labour inputs and disputes about water, to reduce irrigation costs, and to promote efficient water use. The factors found to be most important were: (1) being a village cadre; (2) good state of health; (3) high degree of understanding about water user associations; (4) small percentage of the household in the labour force; (5) cropping income a high percentage of family income; (6) having had previous conflicts involving water use issues.

1. Introduction

Increasingly, regions around the world face growing pressures on their water resources. Great concerns have been raised on this issue, especially in the agricultural sector. In most places, people have depended on the construction of water projects and the development of water-saving technologies to solve water-shortage problems. However, it has become very expensive, both financially and environmentally, to continue to build new water projects (World Bank, 1993). Gradually, it has become more apparent that mismanagement is one of the most important reasons for water shortages. The often poor management of water resources and the imbalance of financial revenues and expenditures tend to be integrally connected to the perceived shortages of water.

In the Inner Mongolia Autonomous Region, a very large province in northern China, the availability of surface water generally is low and variable. More than 80% of Inner Mongolia lies in the arid or semi-arid zones with annual precipitation of less than 400 mm. The usual hot, dry summers with high evaporation make this one of the driest areas of China. Furthermore, the available water is not distributed evenly across time and space. About 60–80% of total annual precipitation falls between June and September. The heaviest precipitation falls in the eastern part of Inner Mongolia with the amount decreasing gradually from east to west.

Most irrigation districts in Inner Mongolia face similar problems as those in other parts of China and, indeed, in many places around the world: shortage of water resources, poor management of water, inefficient use of water resources (10%

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below the national average, which, itself is low compared to many countries), and imbalance of financial revenues and expenditures. Many rural water infrastructure facilities in Inner Mongolia were built in the 1960s and 1970s and have received little or no improvements since that time. As is common elsewhere, much more attention has been paid to construction of the irrigation systems than to effective maintenance and management.

In response to pressing water management problems, many countries have adopted reform policies such as transferring rights and responsibilities of irrigation systems from government agencies to farmers' associations and other private institutions. In several countries, peasants' participation in water management has been encouraged in hopes of reducing government's financial burdens, optimizing the use of water resources, and increasing operational efficiency of hydraulic engineering facilities to solve water-shortage problems. It is widely believed that direct participation in irrigation management by farmers is an effective means of improving farmers' knowledge of irrigation and efficiency of water use.

Water user associations have been promoted across Inner Mongolia to solve water supply problems, promote efficient water use, and alleviate rural poverty. The World Bank found that the improved scheduling of water deliveries in Xinjiang (a province in northwestern China) made possible by formation of water user associations meant that farmers could secure their harvests each year regardless of the weather, thereby contributing greatly to alleviation of rural poverty (World Bank, 2003). They noted that a major cause of poverty in the region was the lack of able-bodied male labourers, which made it difficult for farms to compete for scarce irrigation water. The formation of water user associations eliminated the competition by increasing the total amount of water available and assuring all households some voice in its allocation (World Bank, 2003). An independent team of investigators from the Chinese Academy of Agricultural Science found that farms in water user associations had six percent higher yields due to improved deliveries of water (World Bank, 2003).

In 2006, there were 2876 cooperative water organizations of various forms in Inner Mongolia, of which 519 were water user associations. These organizations control total irrigated area of 880,000 ha. These include 1628 cooperative organizations in large irrigation districts that control an irrigated area of 730,000 ha, 82 in medium-sized irrigation districts with an irrigated area of 70,000 ha and 1156 cooperative organizations in small irrigation districts that control an irrigated area of 83,000 ha (Water Resources Department of Inner Mongolia, 2006). In 2007, 29 new water user associations were established in Inner Mongolia. By 2009, it is expected that another 65 water user associations will be established in that province. The government would like to see this increase further and more quickly.

A water user association is a group of farmers along a lateral canal who establish their own cooperative non-profit organization with a set of rules to manage water deliveries within their area (Lohmar et al., 2003). The farmers in the immediate district can voluntarily join the water user association. After the water user association is registered in the local civil administration department, it has the status of an independent legal entity. It practices independent business accounting and is responsible for its own profits or losses. The general representative assembly is the highest organ of power of a water user association in China and it must be convened at least once per year. The executive committee members are elected by the members. A water user association is empowered to maintain and manage the irrigation and drainage system and to collect fees to cover its expenses.

The purpose of this study is to investigate the degree of familiarity of and inclination of farmers in Inner Mongolia to become members of water user associations. Farmers from three distinct areas of Inner Mongolia were surveyed to determine their level of understanding of water user associations and the factors that affect their willingness to become members. In our study area, irrigation is used primarily for production of corn and wheat, crops that depend on water being available at critical times for high yields.

2. Participatory irrigation management

In China, farmers' participation in management of irrigation systems is quite a new concept. This type of management system was introduced in 1992 with the first pilot research undertaken in Hubei and Hunan provinces. In July 2000, the Government of China, in a nation-wide campaign, called upon all 402 large irrigation districts to find ways to devolve responsibility from irrigation district administration to water user associations (Liu et al., 2008). By the end of 2003, there were more than 3500 water user associations in 20 provinces in China. While the primary interest of the government in participatory irrigation management was to decrease its financial burden, it appears that the water user associations also have led to improved efficiency of water use and other benefits for peasant farmers in rural China. In a survey of 208 households in Hubei province of China, Liu et al. (2008) found the establishment of water user associations had positive effects both on water delivery and rice production.

Lohmar et al. (2003) noted that decreasing investments in surface-water infrastructure in the 1970s and early 1980s led to a decline in irrigated area, poor surface-water management, and growing reliance on ground water for irrigation. In separate studies, Xue (2001), Xue (2004), and Na (2005) discussed the necessity of implementing more participatory irrigation management systems in China. Their premise was that the existing irrigation management system in China, as developed during the many years of the planned economy, was not a good model for success as China unleashed it market driven economy. Lohmar et al. (2003) found that a water user association formed in 1995 in Hubei province led to reduced conflicts between upstream and downstream users. In addition, irrigation services improved and became better coordinated, allowing the entire area to be irrigated in 4 days as compared to 2 weeks before the formation of a water user association. This allowed the group to increase their irrigated area by more than 50%.

Wang et al. (2005, 2006) found in a random sample of 51 villages in Ningxia and Henan provinces, both in the Yellow River Basin of China, that water user associations and