A COMPARATIVE CASE STUDY OF TWO COMMUNITY-MANAGED IRRIGATION SYSTEMS IN CHITWAN DISTRICT, NEPAL

Ratna Raj Nirola
Fhvindra Prasad Pandey

INTRODUCTION

Nepal's irrigation potential is estimated at 1,050,000 hectares (ha) in the Tarai and 200,000 ha in the Hills (Pant and Lohani 1983). The 1981 Water Resource and Energy Commission study estimated that about 500,000 ha receive some irrigation, which is 22 percent of the cultivated area and about 26 percent of the irrigation potential. Four-fifths of the existing irrigation has been developed by farmers and government schemes account for only one fifth (Pant and Lohani 1983). This brings out the significance of farmer-managed irrigation systems in Nepal. This paper is a comparative case study between a traditional single community-managed irrigation system and a new multicommunity-managed irrigation system.

STUDY OBJECTIVES

The objectives of the study were to:

1. Compare the roles of irrigation water users and irrigation water authorities in the traditional single community and new multicommunity-managed irrigation systems. A traditional single community was defined as a group of people of the same origin and caste living together in the same area. The multicommunity was defined as a group of people of different castes and religions who have fairly recently migrated from different parts of the kingdom and who now live together in the same area.

2. Examine differences in the level of conflict in the two systems.

3. Compare the effectiveness of the two systems for mobilizing labor resources for system maintenance.

4. Determine the viability for continued operation of the two systems.

DESCRIPTIONS OF THE IRRIGATION SYSTEMS STUDIED

The Surtana irrigation system was selected for the study to represent a traditional single community-managed irrigation system, and the Lothar irrigation system was selected to represent a new multicommunity-managed irrigation system.

---

[1]Ratna Raj Nirola is a Lecturer at the Public Administration Campus, Tribhuvan University, Kathmandu, Nepal. Ravindra Prasad Pandey is a statistics officer at the Nepal Rastra Bank, Kathmandu, Nepal.

Surtaria Irrigation System

Tho Surtana system is a single community-managed irrigation system in Chitwan district about 17 kilometers (km) east of Bharatpur and 2.0 km south of Parsa on the Bharatpur-Hetauda highway. This system which irrigates ward number five of Khaireni Village Panchayat was constructed about 150 years ago by the Tharus (an ethnic group of Nepal), and is still completely dominated by them. The command area of this system is about 350 ha.

The organizational structure of this system consists of a farmers' committee, with a chairman and six members. Annually, before the pre-monsoon activities, the farmers meet and elect the chairman and committee members. The assembly makes decisions concerning the maintenance of the main canal and canal network.

Lothar Irrigation System

Lothar is a multicommunity-managed irrigation system in Chitwan district about 30 km east of Bharatpur and 1.0 km south of Pratapur on the Bharatpur-Hetauda highway. The new Lothar irrigation system was built by farmers in 1971. The system irrigated ward numbers 1, 2, 3, and 8 of Piple Panchayat. The total command area of the system was about 800 ha.

A majority of the farmers under this system were Brahmins and Chhetris (of the higher castes) who had migrated to Chitwan from the hills in the past 20 to 30 years.

In this system the farmers meet during the post-harvest period in January-February. The general assembly elects a chairman and vice-chairman. The chairman appoints the members of the seven branch canals. The chairman practically holds a mandate from the general assembly to implement all the assembly decisions.

METHODOLOGY

Sample Design

There were 121 households in the Surtana system and 300 in the Lothar system. Every second household from Surtana and every third household from Lothar was chosen for the study, forming a sample of 62 households in Surtana and 100 in Lothar.

Data Collection Procedure

Three different methods were followed for the collection of the information regarding the systems' organization.

1. Interview. Data on the socio-economic condition of the people of the command area was collected by interviewing heads of households.

2. Survey/observation. The investigator used a checklist to systematically collect data on the physical aspects of the irrigation systems.

3. Participants' checklists. Data regarding the operation and maintenance of the system was collected using various formats. A four-point

rating scale was used to collect the opinion of water users about their roles and the role of the water authority. Key informants were interviewed using a list, of questions pertaining to the development. and operation of the systems. Another checklist relating to the views of the water users as related to water allocation, distribution, maintenance, and conflict resolution was administered to water users.

Comparative Inferential Analysis

This was the major part of the study, where each of the objectives was analyzed separately and an inference was drawn on each.

Role comparison. Since this study focused on the job performance of the water authority and water users, the authority's as **well** as users' work-roles had been chosen for analysis in terms of the various activities performed in the irrigation organization. In that context, the degree of responsibility borne by the authority and users as expected or perceived by the incumbents of the position, viz water users was worked out.

The roles were analyzed at two levels: 1) consensus among members of the same system, or intra-system consensus, and 2) 'consensus between the two systems, or inter-system consensus.

Role perception was defined as work actually performed by either water users or water authority. To measure the role perception, the respondents were asked what the water users and the water authority had done in a given situation.

Role expectation was defined as work that should have been performed by either the users or the authority. Respondents were asked what they thought the water users and water authority should do in a given situation.

Level of conflict. Three aspects were considered while examining the level of conflict. Conflict in the role of water users and the water authority was examined by analyzing the variation between the role expertation and perception with the help of F-statistics. The level of conflict over water allocation and distribution was analyzed by studying the respondents' replies to questions related to these issues. The level of conflict regarding system maintenance was identified in the same manner.

Labor resource mobilization. A comparative-descriptive analysis was carried out to study the labor resource mobilization techniques employed.

Continuity status. A critical analysis of both irrigation systems regarding the physical and organizational structure was performed to determine the continuity status of both systems. The continuity status was further identified by studying the level of conflict between the two organizations.

RESULTS OF THE ANALYSIS OF THE DATA

1. The intra-system variation regarding work roles between the two systems was not similar. Among the items on which respondents agreed within one system, 50 percent were the same in the other system regarding role perception. Sixty-two percent of the items on which respondents agreed regarding role expectation were the same in both systems.

2. The responsibility score of the water users of Lothar was higher than in Surtana, hence it can be concluded that the water users of the Lothar irrigation system participate more fully in the operation and maintenance of their system.

3. The responsibility score of the water authority of Surtana was higher than that, of Lothar, indicating that the water authority in the Surtana system performed more of the operation and maintenance duties than is the case of Lothar.

4. Among those items that showed high responsibility in the work role of the water users as they performed their jobs in both irrigation systems were:

a) Distribution and allocation of water among water users.

b) Checking whether the distribution is proper at the sub-system level.

c) Fixing type and degree of punishment to those who violate the rules.

d) Distribution of water to the farm.

e) Preparation of the schedule and norms for regular maintenanre work.

f) Resolving emergency situations at the main and sub-system levels.

g) Resolving conflicts between users.

5. Both systems agreed on more than 70 percent of the items as to the roles and performance of the users in operation and maintenancr of their system. Rut the two systems disagreed on more than half of the items regarding the roles and performance of the water authority. The following are the items on which the respondents in the two systems disagreed:

a) Lothar farmers felt it was the water authority's responsibility to take action on a violation of rules. Surtana gave the responsibility to the water users.

b) Lothar gave the task of estimation of resources and materials for regular maintenance to the water authority.

c) Lothar water users had the responsibility of checking attendance of the laborers in maintenance work. In Surtana this was tho water authority's job.

d) Surtana considered it the job of the authority to detect any problems in the system; in Lothar this was performed by the users.

e) The fixation of taxes **or** other donations for irrigation activities was set by the water users in Lothar, hut by the authority in Surtana.

f) Lothar water users resolved water-related conflicts that arose **among** the users. In Surtana this was performed by the water authority.

6. The respondents in both systems shared similar attitudes about perception and expectation.

7. The level of conflict in the work role was a bit higher in Lothar as compared to Surtana. The farmers in Lothar were more interactive with the water authority and conscious of their responsibilities. In Surtana the traditional leaders and customs of the Tharu community dictated how the system was operated.

8. There was no conflict regarding water distribution and allocation in either system as there is an abundant water supply available. However, in Surtana the level of ethnic conflict was higher because of a high level of discrimination of the Tharus against the minority group of newly-arrived hill people. In the future this level of conflict may lead to an increase in conflirts between the large Tharu farmer and smaller farmer regarding water allocation.

9. Regarding labor mobilization, there was more conflict. in Surtana. The smaller farmers in Surtana were not satisfied with the present system of mobilizing labor. In this system all the members of the household (except household head, women, school children, and shepherds) who use irrigation water are required to contribute labor throughout the period of maintenance. Sixty percent of the farmers preferred that labor contributions be assessed according to size of landholdings.

In Lothar a household using irrigation water has to contribute only one laborer throughout the period of maintenance. Fifty-eight percent of the farmers in Lothar were satisfied with this system.

10. The Lothar irrigation system had a more effective way of mobilizing labor. During the early paddy season the farmers are not allowed to cultivate more than one hectare of land. They share their land with other landless farmers, providing them with 50 percent of the seeds and fertilizer needed. In return the early paddy cultivator provides the landlord with half cf the produce. As this cultivator uses irrigation water, he is required to contribute one laborer per maintenance activity, thereby enlarging the labor resource.

11. The physical system was stronger in Surtana as compared to Lothar. The Surtana water source is a non-perennial one and its intake structure is permanent. Lothar takes water from the Lothar Khola as well as the Rapti river. Its intake is built on the flood plains of the Rapti river, and is washed away every year by the Rapti floods.

However, the organizational structure was stronger in Lothar because the level of conflict in Lothar was much lower, and also because the labor mobilization pattern is seen as more effective. Lothar holds more promise in terms of the ability of its organization to continue to function effectively.

SUMMARY

The findings of this study may help policy makers get a general view of the managerial situations found in different community-owned irrigation systems. On the basis of the findings, the following recommendations are made for consideration in similar situations.

1. The agencies dealing with the development of irrigation in Nepal should focus on the ethnological composition of the water users in a given irrigation area. This is important because the homogeneous/heterogeneous ethnological composition affects the management of an irrigation system, particularly as related to conflict resolution, resource mobilization, leadership,

and the extent of equity in irrigation resource distribution and user participation.

Contrary to the generally-held belief that in ethnically homogeneous irrigation systems better management is more easily achievable, this study showed that in the ethnically heterogeneous Lothar irrigation system, management in terms of those factors mentioned above was better in comparison to Surtana, the ethnically homogeneous system.

2. Policy makers and implementing agencies should give priority to intervention in heterogeneous migrant irrigation communities (especially **in** the Tarai) in order to bolster its modern organizational and management capacity.

3. Single community-managed irrigation systems require a more subtle approach when designing intervention. The homogeneous community felt that outsiders were threats to established traditions. Therefore, it **is** very important. that the leaders of these communities first. he taken into confidence before any irrigation development program is launched.

REFERENCE

Pant, Thakur Nath and Jyoti Lohani 1983. Some observations on irrigation development in Nepal. Paper presented at the Seminar on Water Management Issues. **31** July to 2 August 1983. Jointly organized by Ministry of Agriculture, HMGN/APROSC and ADC.

SECTION IV: CONCEPT PAPERS