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Nepal

✓ **Rajapur FMIS Rehabilitation Project**

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Nepal is basically an agricultural country with seventy percent of irrigated agriculture dependent upon Farmer-Managed Irrigation Systems. Rajapur Irrigation System, located in the plains of Western Nepal, is one of the largest FMIS in Nepal. The irrigated area is an alluvial fan bound by two branches of the Karnali River, a major tributary of the River Ganges of India. The total command area is about 15,800 ha. Rajapur is the main town within the command area. There is only dry-season access to the command area as it usually remains cut-off during the monsoon season.

It is recalled that irrigation development in this area started over hundred years ago through gradual building of the *Burhi Kulo* (canal) irrigation system with an inundation intake from the Karnali River at the initiative of the *Tharu* community leaders. Tharus are sometimes called born irrigation engineers. This system, along with its 11 branches, now commands an area of about 9,000 ha. Five more systems had subsequently been developed to increase cultivation. These systems

vary in size from 700 to 2,300 ha. All these six systems were constructed and are managed by the local community itself.

There are no permanent masonry structures in the systems. Large quantities of brushwood, timber, boulder and a huge labor force are required every year to repair and maintain the systems.

The net cultivated area is 14,000 ha, of which only 12,000 are presently being irrigated. The rest is rain-fed.

Due to the open intake, excessive flood discharges enter into the canals eroding the canal banks. The floods frequently wash off the brushwood structures and deposit huge amounts of gravel and sand. As a result, water distribution is either disrupted or inadequate. At tail ends water shortages are generally experienced. During winter and spring, there is a general shortage of water due to the low water level in the main river.

Due to the fast environmental degradation in the upper catchments, the silt load in flood water has increased tremendously. Silt enters these canal systems causing difficulty in clearing and maintenance of the canals. Rapid deforestation has caused great hardship in obtaining forest products for the maintenance of structures of these systems. In recent years, the government has assisted by providing gabion wires to make crated boulder structural works in place of brushwood and timber.

Six effective farmers' organizations have been in operation for decades. Their established rules and regulations for O&M seem to be adequate. However, in recent years, they are facing increasing hardships in maintaining the systems and providing adequate and equitable water distribution to all the branches and distributories. The main reasons identified are uncontrolled floodwater entry into the canals, canal and river bank erosion, lack of flood protection works, high labor requirements for maintenance, unavailability of construction materials nearby, lack of cross-regulating structures and shortage of water during low flow in the Karnali River.

Some of these problems are within the capability of the farmers to solve. They need technical assistance to deal with problems of the intakes and the main canal. The problems at the branch-canal level are not that acute. The farmers seem quite capable of solving the problems at village-canal level by themselves.

A review of the socioeconomic situation of the farmers of the area shows that in the nonagricultural period farmers remain mostly engaged in the repair and maintenance works of their systems. They have to work hard to bring water for the next crop. An improved irrigation system will provide time and opportunity for supplementary income to the farmers.

A feasibility study has been carried out to find solutions to the present problems related to the intakes and the main and branch-canals. Several alternatives have been studied with the active collaboration of the existing six farmers' organizations. It was discussed whether the six intakes should be separately improved or merged into one. The farmers prefer to have one intake and connect all the systems to one main supply canal

because maintaining the intakes has taken up much of the labor force.

The present Nepal Government policy for irrigation development has made beneficiary participation mandatory. Close coordination in project initiation, identification, design and construction is compulsory. Besides, the beneficiaries are required to contribute to the capital cost (in proportion to size and according to a cost per hectare basis) and commit themselves to full responsibility for O&M. In developing countries, it is evident that the resources of poor farmers and the government are limited and, therefore, a ceiling on the cost of the rehabilitation has to be fixed.

Under the government policy, rehabilitation costs have been fixed at a maximum limit of Rs 40,000 (US\$ 830) per ha. Of this cost, the government will contribute up to 93 percent and the remaining 7 percent has to be borne by the users; 1 percent must be in cash and the rest in labor or kind.

Before actual implementation of a project, a Central Farmers' Association (CFA) will have to be established combining all the six irrigation organizations at the apex and it has to be registered with the government to become institutionalized and get recognition as a corporate entity. Thus, the farmers will be effectively involved in the planning, design and construction of the project. They will have major rights in the decision-making process to ensure their close participation.

### **Challenges**

One of the issues always talked about is how to assist farmer-managed irrigation schemes without damaging their capacity and self-reliance. In this case, consideration was given to limiting government intervention and involving beneficiaries' representatives in the process of implementation (i.e., design and construction). Yet, several challenges remain. Some of these are: (i) whether the management tempo and self-reliance can be maintained when the six systems are merged into one; (ii) whether combining six different intakes and systems into one can be managed ensuring equitable division of water without disrupting the long-established organizational patterns; (iii) whether the government agency can depute managers who are farmer-oriented with a good understanding of the strengths and weaknesses of Nepalese FMIS, if in fact such people do exist in the present irrigation

bureaucracy; and (iv) whether there is surety that the agency's personnel will not turn the project into a construction-orientated one once again.

### **Conclusion**

In Nepal, irrigation systems have been sources of communal unity and harmony. The irrigation assets have been treated as common property. FMIS of Nepal clearly demonstrate that wherever there is difficulty in acquiring and transporting water there are strong organizations. In a homogenous ethnic society, the working of irrigation associations has been effective.

In the past, government intervention in rehabilitation or modernization of FMIS has invariably created a dependency syndrome. This may be due to defective processes and procedures of intervention and treating such works as construction

projects. Naturally, the agency officials lack experience working with farmers and farmers' organization. In Nepal, often at the insistence of agency technicians, several intakes have been combined into one and the systems merged through one main feeder canal disrupting the management of the system and weakening the organizations.

Nearly one third of the Rajapur area is now occupied by other ethnic groups who have migrated from hills and have purchased lands from the original inhabitants (*Tharus*). In view of these challenges, it would be very important for researchers to document the process of rehabilitation and the developments occurring there.

*[From a paper by N. Ansari, Joint Secretary, Ministry of Water Resources, His Majesty's Government, Nepal.]*

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