

Learning from a four century old irrigation system



A wooden aqueduct in the irrigation channel.

The following tells the history of how three villages cooperated to build an irrigation system that through mutual respect and cooperation is still functional after 400 years. We are told how the system was managed and maintained. Recently, outside funds were needed to help rebuild, after a landslide partly destroyed the system.

Birendra B. Basnyat, Bishnu P. Kharel and Ram B. Thapa

Phoi Mahadev is a mountainous village in Kalikot district in mid-western Nepal. It is located at 2,200 metres above sea level, on the banks of the Tila River. The terraced agricultural land of Chabisa Kuria is distributed over three of the nine wards of the Phoi Mahadev Village Development Committee (VDC). Chabisa Kuria has an irrigation system with a capacity to irrigate 75 hectares of arable land. The

irrigation system has survived for four centuries and is operating to date despite its temporary headwork and unlined canal with many wooden aqueducts that require often replacement, repair and maintenance. The strength of the system lies in its social organization. Three communities are interlinked through activities such as community worship, labour exchange and joint collection of fuelwood and leaf litter. Irrigation management is organized through a tripartite relationship of a water users committee, a canal supervisor (Kulal) and a water distributor (Noralo).

Strategic coalitions

The irrigation system of Chabisa Kuria is the result of successful negotiations between three villages when Phoi Mahadev was part of the Jumla Kingdom. King Bhana Shahi forged strategic coalitions between Phoi, Ranchuli and Nagma villagers four hundred years ago. At that time Phoi had successfully increased food production by constructing an irrigation system. However, they were faced with a serious forest shortage. On the other side of the Tila river, Ranchuli village had forest land in abundance. Chabisa Kuria asked Ranchuli for access to the forests to collect fuelwood, fodder and leaf litter. Faced with a shortage of arable land, Ranchuli agreed on condition that all households belonging to Chabisa Kuria would provide them with a fixed amount of rice and wheat every year. However, to gain access to the Ranchuli forest, a canal had to be constructed which would pass through Nagma, a village near the river. Nagma had easy access to water from the river as well as the forest. Thus, they were not likely to participate in construction nor maintenance of the canal. Chabisa Kuria households negotiated successfully with Nagma villagers who lived near the water head. It was agreed that they would contribute a male goat every year to the irrigation committee of Chabisa Kuria for an annual feast, providing that a male goat was not too costly for Nagma and an annual feast would keep the irrigation committee on good terms and intact. A few years ago, the male goat was replaced by a contribution of 300 Nepalese Rupees per year for repair and maintenance of the canal. This amount is actually cheaper than providing a goat.

Negotiating with an evil spirit

During the construction of the canal, people almost withdrew from the work because they did not succeed in passing water through a huge hard rock. If the canal would be ready one day, it cracked the next day. The villagers consulted a local healer (Dhami). He found an evil spirit residing firmly in the rock and instructed the villages to sacrifice a human life to quiet it. An old and poor man offered his dumb son for cash. The boy was about to be sacrificed when they hear him pray aloud not to kill him. Finding a dumb man speaking was a miracle and the villagers released him. After this event, water flowed easily through the hard rock. Ever since, a goat is offered and community worship held annually to mark this day and keep the spirit quiet.

External interventions

This case of Phoi Mahadev shows that people do manage their common property as sustainably as they manage their private property. After more than four centuries, the irrigation system is still perfectly in place in the absence of external supporting agencies. For some, this might be an argument to denounce the need for external interventions to bring about sustainable management of local resources. However, the case does not suggest so. Without King Bhanu Shahi's intervention in bringing the people of Chabisa Kuria, Ranchull and Nagma together to negotiate for the best interests of all the parties concerned, the construction of the system might not have been possible. The question is therefore only one of the mode and scale of intervention.

In Phoi, people are proud and honoured to tell that their irrigation system has remained intact because of their unity, respect for local traditions and customs, and collective action. In past years financial assistance was refused from the District Development Committee to repair and maintain the irrigation system, because they were afraid that this meagre support would break down. However, in 1995 the system nearly collapsed due to a heavy landslide. Support was accepted from the Netherlands funded Karnali Local Development Programme / SNV Nepal (KLDP) for rehabilitation. The villagers considered project support sincere, effective and useful. The headwork and canal have now become permanent (i.e. cemented, strong and firm). Although KLDP was conscious not to disturb the traditional local management system, the effect of its intervention is yet to be seen.

Birendra B. Basnyal, Bishnu P. Kharel and Ram B. Thapa, Gha-1-658-7, Balaju Bypass, Kathmandu-4, Nepal.

Managing the irrigation system: a tripartite relationship

Chabisa Kuria villagers were given the responsibility of keeping the system operational. They had to organize themselves and maintain good relations with both Nagma and Ranchull. Furthermore, they had to find a sustainable way of operating, repairing and maintaining the irrigation canal. The management system had to fit into their socio-economic and environmental conditions. As the headwork has never been permanent it has always needed to be repaired and maintained every year before the rainy season. For three to four months in winter, most men in the village go to the cities of northern India to work as wage labourers and to bring back salt, clothes and agricultural implements. This, if not taken into account, would lead to labour shortage in repairing the canal on time. As the canal is long (about 3 km), weak, and made of stone and soil with many wooden aqueducts, visiting the headwork and canal frequently is difficult. Chabisa Kuria established a management system which is still in place: a watermill and a tripartite relationship of water users committee, canal supervisor (*Kulal*) and water distributor (*Noralo*).

The Committee

Overall responsibility for the system's functioning lies with the irrigation management committee of water users. Its membership rotates annually and is reorganized on the 12th of the month of Chaitra of the Nepalese calendar. The committee oversees repair and maintenance of the canal, and regulates distribution of irrigation water among users. The committee manages labour, monitors performance of *Kulal* and *Noralo*, and administers fines to people who are unable to work for various reasons. People are required to return from India before Chaitra 12 for maintenance and repair work on the canal. This indeed happens out of commitment to the system, which requires a lot of labour. Failing to repair the canal on time means no food and forest resources. All users comply with the committee's decisions. They meet every year on the 12th of Chaitra to make decisions about operation and maintenance. If people would not have organized themselves into an irrigation committee, the system would probably have fallen apart many years ago.

Kulal (canal supervisor)

Every year a *Kulal* is selected at the users meeting, but always from Bajedi village (Ward 3, Phoi Mahadev VDC). Bajedi villagers have had this responsibility for generations. They know

the weak points in the canal and are skilled in repairing and maintaining it. A community water mill (Pani Ghatta) is established which is operated by the *Kulal*. The water mill makes supervision of headwork and canal easier and enables the *Kulal* to work on time. Water from the canal flows to the mill first and then to the farms. When the mill stops functioning, the *Kulal* immediately walks towards the water source. Minor repairs are done by him, otherwise, he will inform other users to have it repaired through the committee. Besides his income from grinding cereals in the mill, each household also pays the *Kulal* two (local) pathi of cereals for his services. To date, this linkage between management of the canal and the water mill works well.

Noralo (water distributor)

The *Noralo* keeps track of who is to transplant rice, where, when and how long. Based on this information he sees to it that all users receive water on time and fairly. When there is little water in the canal, the *Noralo* has to inform the *Kulal* to improve the water source. If the *Kulal* does not perform well, the *Noralo* passes this on to the committee and the committee takes necessary actions. In the system, neither the *Kulal* nor the *Noralo* control one another. The committee controls both. Besides distributing water among users, the *Noralo* also protects standing crops from free grazing of animals. All users pay him an annual amount of cereals irrespective of users' land size. Like the *Kulal*, the *Noralo* is selected during the users meeting.

Linkages with other local institutions

The tripartite relationship (see Figure 1) is very much interlinked with the Parma or Padima system of labour exchange. The Parma system is a response to labour and cash shortage. It deals with the management and distribution of labour and comprises planning of all farming activities from planting to harvesting in order to manage especially rice cultivation. When a person receives water on a certain day for transplanting rice, the Parma system takes care that people from other households assist. They keep an account of who worked in whose field for how many days. This makes it easy to calculate who is to receive additional money or grains for extra work and from whom. The amount has to be settled on the 12th of Chaitra, otherwise interest has to be paid according to local custom and rule.

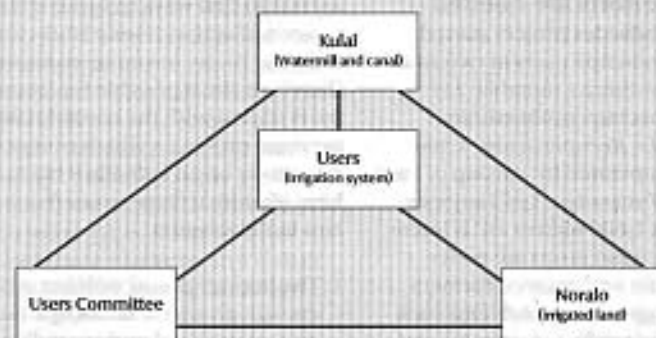


Figure 1: Relation between *Kulal*, *Noralo* and Users in the Irrigation System