

MULTI-FUNCTIONAL, NON-RESIDENTIAL
IRRIGATION ORGANIZATION: A CASE STUDY OF
KODKU IRRIGATION SYSTEM OF KATHMANDU VALLEY

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INTRODUCTION

The Kodku irrigation system is one of the oldest and largest irrigation systems operating in Lalitpur District. The responsibility for operation and maintenance of the system is performed by the farmers who belong to organizations known as Si Guthis since a long time back. Si Guthi is an organization of the Newar ethnic group whose primary function is to perform funeral and cremation rites for its members. In the Kodku irrigation system the Si Guthis have taken on the additional function of mobilizing their members for the operation and maintenance of the system.

The diversion weir and canal are temporary in nature, and require regular repair. Sometimes even the course of the stream changes, and the farmers have had to put lots of effort into making the irrigation system work. Hence, the farmers had to organize themselves to get water delivered to their farms, which they accomplished through their Si Guthis.

In **1965** His Majesty's Government of Nepal (HMGN) undertook rehabilitation of the system with the assistance of the Government of India. After rehabilitation the responsibility for operation and maintenance of the system was assumed by the Department of Irrigation, Hydrology, and Meteorology (DIHM). DIHM employs dhalpas (canal gatekeepers), with a maintenance allocation from the Department.

The command area is 562 hectares (ha) which includes Thaiba, Harisidhi, and Imadol of Lalitpur District. DIHM has estimated the beneficiaries to be about 5,000 farmers. The source of water for this system is the Kodku Khola ^{river} (also called Karma Nasa) which originates at Guindaha of Badikhel village panchayat. This system is run-off-the-river type. The total length of the canal is **5.67** kilometers (km). The water discharge, as estimated by DIHM, is 0.5 cubic meters per second (m³/sec).

OBJECTIVES

The objectives of the study are:

1. To understand the organizational structure of the Si Guthi in relation to irrigation system management.
2. To observe the method of operation and maintenance of the system.
3. To determine the method of resource mobilization; and

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4. To understand the management of conflict during the time of water stealing and other events.

METHODOLOGY

The methodology used for this study is observation accomplished by a "walk-through" of the system, and unstructured interviews with farmers, Guthi members, and DIHM officials. Needing to collect information on the historical background of the system, a list of key informants was formulated in consultation with the farmers and other people who had been active in the irrigation system. In order to interview key members of the Guthis from both Patan and Thaiba, informants from these Guthis were identified. The informants introduced the researchers to key people involved with the irrigation system.

IRRIGATION ORGANIZATION

The irrigation organization is not the same throughout the system. The farmers at the head could only answer questions pertaining to their own group. Farmers in the middle and tailend of the system were likewise only concerned with the operation of their part of the system. There are distinctive features characterizing this system. Farmers at the head reside close to their fields, but those at the middle and tail sections live far from their fields. The farmers do not have one irrigators' association for the entire system, but carry out irrigation operation and maintenance functions through the direction of their respective Si Guthis. Si Guthi organizations have been active in performing irrigation functions in this system for many years.

The Kodku Irrigation System can be divided into three areas: head, middle and tailend. Most of the land in the head is tilled by the farmers of Harisidhi. In the middle, the land is tilled by the farmers of Lalitpur Town Panchayat and the people from Imadol till the land at the tailend of the system. Si Guthis manage the head and middle but not the tailend. The tailend people work individually or sometimes join with farmers from Lalitpur Town Panchayat during the desiltation of the canal. The farmers in the head and middle have little interaction in managing the system. The three groups manage their respective parts of the system by their separate organizations.

Organization of Farmers in Patan City

The farmers in Patan live in eight toles (sections of a street are known as toles): Dupat, Pilachen, Tyagal, Haku Tole, Saquo, Suwal, Dhalchess and Luchen. These eight toles together are known as Wachoo Khutwa. Most of the farmers are the tillers of Khonathu Paant (the middle section of the irrigation canal). The farmers in each tole manage the irrigation system through their Si Guthis.

About 75 percent of the farmers in Patan till land in the command area. However, even the Si Guthi members having no land in the command area are required to help desilt the canal when the Guthi so orders. A strict rule exists whereby everyone must obey orders issued by the Guthi.

In the Si Guthi the oldest member is a leader, called Nayo or Aaju. His orders should be obeyed by all members. Although decisions are made on the basis of majority, the voice of seniors carries much weight. Generally, the

heads of households of the tole become members of a Si Guthi but membership is not compulsory. All the members in these Guthis belong to Maharjan castes.

The eight Si Guthis of the different toles have combined to mobilize labor for the operation and maintenance of the system. Dupat Tole has taken leadership among these Guthis. This authority, as reported, was delivered by the Malla king and it continues to be recognized. Functions which include determining meeting dates and keeping records are the responsibility of Dupat Tole.

When a meeting is needed, three messengers from Dupat known as Kaajis inform six senior members (Aajus) in the different Guthis. The decisions taken in the meeting are then conveyed to the appropriate Guthi member.

Organization of Farmers in Harisidhi

Similar to Patan, there are four Si Guthis: Raj Guthi, Etagu Guthi, Mydyagu Guthi, and Sallagu Guthi operating in this area which also perform management functions for the irrigation system at the head. All the people in these Guthis are from the Maharjan caste of the Newar ethnic group. Every household head of Harisidhi Panchayat is a member in one of the four Guthis. Even the migrant Maharjans in this area have been included in these Guthis. There are altogether 655 households including nonmembers.² There are only five families from non-Newar communities in the village who are not members of these Guthis and who need not contribute to operation and maintenance of the system.

Raj Guthi is recognized as the main Guthi in this area. It has the largest number of members and has been in existence for a long period of time. The directives issued by Raj Guthi are binding upon all the other Guthis in the area.

Various Guthi leaders perform specific functions for the organization:

1. Nayo: Nayo (leader) is the oldest member of the Guthi, and he is in charge of all Guthi activities. Other members act according to his direction.

2. Madaa: The madaa receives his position on a hereditary basis. His responsibility is to keep the account books. He is also responsible for mobilizing its members to collect firewood on the date fixed by HMGN. On that day they are allowed to cut the living trees in Pulchoki forest. The collected firewood is used only for cremating the Guthi members.

3. Paala: The paalas are Guthi members responsible for organizing different ceremonies. This responsibility is rotated annually to other members of the Guthi. There are four paalas in the Raj Guthi, three in Etagu, two each in Mudyagu and Sallagu Guthi at a time. During their term, they are responsible for informing members when work is to be done on the irrigation

² A son maintaining a household separate from his father is considered a nonmember until the death of the parent, whereby the son becomes a Guthi member. Nevertheless, the son is expected to contribute 3.5 kg of rice to the Guthi each year so that his family can receive the Guthi's assistance when needed. There are 204 members and 300 nonmembers in Raj Guthi, 50 members and 57 nonmembers in Etagu, 30 and 14 in Mudyagu and Sallagu respectively.

canal. Paalas keep records of absentees and forward the information to the Guthi for punitive action.

Water Allocation and Distribution

In this irrigation system, within a section, there is no hard and fast rule for allocating water to a particular field. Wherever the farmers need water they open the canal outlet and irrigate their land. After getting enough water, they either channel it to another field or they close the outlet in the canal,

However, as reported by the farmers, there was an order issued by the then Rana Prime Minister, Juddha Shumsher J.R.R. that farmers cultivating fields at the head should finish paddy transplantation before the end of June (15th of Ashadh on the Nepali calendar). This practice later became the rule. Therefore, farmers in this area usually transplant the paddy from the middle of May (beginning of Jestha) and finish before June. The turn then goes to the farmers cultivating in the middle part of the command area. In both places, farmers get enough water to their land for the transplantation of paddy.

There is another understanding: all land is to receive water for transplanting paddy before water can be re-distributed to the head where they have already used water for transplantation. There is no law regarding this. However, it is socially accepted that everybody should plant the paddy first, and unacceptable to get water repeatedly to the detriment of the transplantation of paddy of others. However, when there is no rain, the farmers at the head sometimes apply water repeatedly to their land. The farmers consider this water stealing. In order to check such malpractice the farmers in the middle area guard the canal. The canal gatekeepers/guards (dhalpas) continue their supervision until all the farmers finish the transplantation. The dhalpa system is usually only necessary during drought or if the monsoon is late.

For water allocation, land adjoining the canal receives first priority. Water is allocated according to land size. Water is usually allowed to reach a level of nine inches in the field before it is then channeled to adjoining land sequentially. This is easily achieved because the land is terraced.

For water distribution, no devices are used. There are outlets in the main canal as well as in the branch canals. When the farmers need water, they open the outlet in the canal. After using water, they close the outlet with mud known as chapari along with some bushes and stones. To channel the water from one terrace to another they make an opening in the bund and divert the water. This is the common field-to-field irrigation practice. During the season most farmers remain in the field awaiting their turns for water. In the middle section of the command area the dhalpas supervise the distribution.

Resource Mobilization

In order to manage the Kodku Irrigation System, Si Guthis mobilize labor for desiltation and canal repairs, and organize the dhalpas to guard against water stealing. They also assign the waa paas, who guard the ripe paddy crop from thieves.

Role of the farmers within Lalitpur Town Panchayat. In the past, when the intake washed away or needed major repair due to changes of the river course, a lot of labor and materials had to be mobilized. If the damage was beyond the capacity of the farmers, the farmers would request that the town

brigade³ provide assistance. The brigade would provide army personnel and materials (bamboo and wooden sticks) for the repair work.

There was a religious belief that iron implements should not be used in constructing the intake and everything should be done by hand. Thus, when they had to divert the stream they used bamboo and wooden sticks.

The annual task of desilting the canal is begun by the farmers of Wachoo Khutwa on the first of July (15th of Ashadh). Shortly before this date, a team of farmers including messengers from Dupat assesses the damage in the canal and reports to the Guthi members.

All Si Guthi members must be present at the time of desiltation. Persons absent from work are fined by their Guthi, which keeps records of attendance. The fines vary from one Si Guthi to another. Previously, the fine amounted to less than one cent U.S. but due to inflation the fine has been raised to approximately U.S.\$1.00. The actual amount of the fine is not as important as is the social sanction which it enforces. Consequently, it is reported that relatively few people remain absent from the work.

When major repairs of the canal must be undertaken, a meeting is held in Dupat Tole where the area to be repaired is divided into parts and each part is assigned to a different Si Guthi.

During water shortages, the people from Wachoo Khutwa guard the canal. This practice continues until all the farmers complete paddy transplantation work.

Each of the five main Guthis send four persons (previously it was eight persons) and each of the three smaller Guthis send two persons each as guards (dhalpas). The 26 dhalpas are divided into three groups, each assigned to guard a particular area: the intake site, the water spout in Thaiba, and in Khonathu (the middle section).

The dhalpas at the intake are responsible for the canal section as far as Thaiba. The Thaiba dhalpa guards the canal up to the brick factory, and dhalpas staying in Khonathu are responsible for the rest of the canal. Each tole has a specific responsibility. Four people from Sunwal tole and four from Peenchen guard the intake. Four dhalpas from Dupat and four from Pilchen toles supervise the middle section, and ten persons from the four remaining toles are assigned to Thaiba.

The turn of the dhalpas is decided by the respective Si Guthi. Their responsibility is to operate the canal and prevent water stealing. The dhalpas staying in Khonathu also have to supervise the distribution of water in the field. The dhalpas do not get any remuneration for their work. It is their obligation as members of the Guthi.

In the past, there were often incidents of stealing the paddy from the field since the farmers of this area live far from their farms. To prevent this, the farmers from Wachoo Khutwa assigned people to guard the paddy fields at harvest time. The guards rotated duty. Usually only 20 guards were required.

³ Prior to the overthrowing of the Rana regime in Nepal in 1951 there was an Army brigade in Lalitpur located at Lagankhel whose responsibility was to maintain law and order in the area, similar to the Chief District Officer at present.

If somebody was caught stealing paddy, he or she was handed over to the brigade for punishment.

During the time of drought, farmers from Wachoo Khutwa and Hnrisirlihi visit Naudhara in Godavari to pray to the snake god for water. On that occasion, representatives from each house in Wachoo Khutwa and Harisidhi go to worship the snake god. The Rana government would provide a goat and money for two Buddhiat Bajracharya priests to worship the snake god in Naudhara, and a goat is sacrificed to the goddess Fucha mai in Pulchoki. Then the farmers return and walk along the canal, asking for rain. On this occasion, all the members are not compelled to attend, but usually everyone would be present.

When the monsoon arrived too late for paddy transplantation, the brigade supplied pea seed to the farmers so that the land would not remain fallow.

Role of the farmers in head area. The farmers of this area mobilize labor for canal repair and operation. Generally, repairing and desilting this part of the canal is less problematic. The farmers at the head have only a small stretch of the canal to maintain. They usually transplant paddy during the middle of May (first week of Jestha) when the monsoon has not yet started. Therefore, there are less chances of changes in the course of the stream, and usually less repairs to the canal are needed.

If the canal is damaged, the Guthi members of the area organize for the maintenance of the canal. The leader of Raj Guthi and other members hold a meeting at which they estimate the amount of work needed to make the repairs, divide the duties among the various Guthis, and then make assignments to their own members. The paala relays the division of work assignments to the paalas of the other Guthis in the area. The paala is responsible for informing the members of his Guthi and he also keeps the record of absentees. Defaulters are fined and the funds raised from fines are kept in the Guthi's treasury. The names of those members who have already participated in the work are recorded and they need not contribute labor again until all the members have contributed.

Once all the members and nonmembers of a Guthi fulfill their duty the paalas inform another Guthi and it becomes the responsibility of that Guthi to work in the canal. This continues until all the members of the four Guthis complete their turns. All the members and nonmembers of the four Guthis may not finish their turn of duty in a year, in which case the turn rotates into the next year.

During a drought, the members of these Guthis also worship the rain god in Naudhara of Godavari. If it has not rained by the first of July (15th of Ashadh) the madaa collects money from each member of the four Guthis to pay for the offerings to the rain god, asking for rain for their lands. All members of the Guthi are not required to participate in the worship, but few farmers miss this event.

Conflict Management

Generally, there are few conflicts over water allocation and distribution among the members of a Guthi. Differences of opinions are usually resolved in Guthi meetings. However, when there are conflicts between the people of the head and middle sections of the system, the brigade is called in to resolve the dispute. Most of the conflicts occur during plantation time when farmers in

the head area sometimes apply more water at the cost of plantation in the middle area.

The dispute is resolved in a public meeting held at the public court area of Lagankhel. The farmers and public gather to hear the case as put forth by the respective parties, and the colonel gives his decision. If punishment is necessary, the colonel determines what it should be. The culprit might be locked up in the army camp for several days, or he might be released after giving a written bond. In the case that the colonel of Lalitpur is unable to resolve the problem, he forwards the case to the Sundhara Brigade of Kathmandu, which is the headquarters of the three brigades of Kathmandu, Lalitpur, and Bhaktapur. Most cases referred to the brigade involved water stealing.

Aftermath of Rehabilitation

Under a program of rehabilitation, the DIHM took over the responsibility for the regular maintenance of the system. It hired government dhalpas and set aside funds for annual maintenance. Table 1 shows the operation and maintenance expenditure by DIHM for the Kodku system from 1983 to 1986.

However, the farmers say that the system has deteriorated since government has assumed responsibility for maintenance and operation. The government funds are insufficient to undertake necessary improvements and the dhalpas from DIHM do not take full responsibility for the operation and maintenance. When the system was run by the farmers a regular schedule for maintenance was followed and everyone knew the dates when the work was to be done. Now the Guthis are never sure whether DIHM will do the repairs and complete them in time. Due to lack of funds, maintenance is sometimes not performed. By the time the farmers realize the problem, it may be too late for agricultural activities.

Table 1. Actual operation and maintenance expenditure by DIHM for the Kodku System from 1982/83 to 1985/86.

Fiscal year	Operation (Rs)	Maintenance (Rs)
1982/83	15,200	83,120
1983/84	24,595	234,363
1984/85	19,800	141,509
1985/86	11,200	97,969

CONCLUSION

This irrigation system is an old and traditionally community-managed system. The Si Guthis of the Newar ethnic group have been involved in the operation and maintenance of the system for a long time. With the intervention of DIHM in 1965 there has been structural improvement in the aystem thereby reducing the burden of labor mobilization to some extent. However, lack of communication between farmers and DIHM dhalpas in the O&M and the apathetic attitude of the DIHM dhalpas have affected the effective management of the irrigation system.