

NATURAL RESOURCE MANAGEMENT PAPER SERIES

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**INSTITUTION BUILDING AND RURAL DEVELOPMENT
IN NEPAL:**

Gadkhar Water Users' Committee

Upendra Gautam

HMG-USAID-GTZ-IDRC-FORD-WINROCK PROJECT

STRENGTHENING INSTITUTIONAL CAPACITY IN THE

FOOD AND AGRICULTURAL SECTOR IN NEPAL

FOREWORD

This Natural Resource Management Paper Series is funded through the project, "Strengthening Institutional Capacity in the Food and Agricultural Sector in Nepal," a cooperative effort by the Ministry of Agriculture (MOA) of His Majesty's Government of Nepal and the Winrock International Institute for Agricultural Development. This project has been made possible by substantial financial support from the U.S. Agency for International Development (USAID), the German Agency for Technical Cooperation (GTZ), the Canadian International Development Research Centre (IDRC), and the Ford Foundation.

One of the most important activities of this project is funding for problem-oriented research by young professional staff of agricultural agencies of the MOA and related institutions, as well as by concerned individuals in the private sector. This research is carried out with the active professional assistance of the Winrock staff.

The purpose of this Natural Resource Management Paper Series is to make the results of the research activities related to natural resources available to a larger audience, and to acquaint younger staff and students with advanced methods of research and statistical analysis. It is also hoped that publication of the Series will stimulate discussion among policymakers and thereby assist in the formulation of policies which are suitable to the development of Nepal's agriculture.

The views expressed in this Research Report Series are those of the authors, and do not necessarily reflect the views of their respective parent institutions.

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INSTITUTION BUILDING AND RURAL DEVELOPMENT IN NEPAL:

Gadkhar Water Users Committee

Upendra Gautam*

INTRODUCTION

Building institutions in rural areas has become an important task for development projects undertaken by the government. The idea, which is frequently professed but has not yet been sincerely implemented, is that without decisive involvement, neither the benefactors nor the beneficiaries can fully identify with a project and donated resources will not be utilized effectively. Projects remain bureaucratic liabilities, and reaching required levels of operation and sustainability are remote possibilities. Documentation is needed on the areas which have begun to build institutions to monitor ongoing projects.

Institution building in Nepal generally refers to the development of organizations that pursue the objectives of a given project. The history of rural development in this country has largely been characterized as a quest for a set-up that could sustain and promote the newly established organizations and deliver to clients. In Nepal's rural context, these clients are predominantly farmers.

The society and economy of Nepal are mainly land-based. Rural Nepal is plagued by widespread scarcity of almost everything which is important for the improvement of human lives; therefore the smallest availability of, or accessibility to, scarce resources--in the form of aid projects or supplies, for example--provokes intense competition among the people. This leads to instability, conflict, and polarization, unless some kind of organization is present.

There is often a lack of real commitment to rural development projects directly managed by a government that is reluctant to build rural institutions that will ultimately look after the day-to-day implementation of the project, within a time frame and with the assistance of an external agency. The government has now developed "users' committees" at the rural project level. They were first established with the initiation of the hill irrigation schemes implemented under the IBRD/IDA - financed Rasuwa-Nuwakot Project in 1976.

Formation of these committees is consistent with the Decentralization Act of 1982, which states that enlisting maximum participation from the local people in managing scarce resources and equitably distributing the fruits of development would promote the welfare of the whole population. The Act specifically provides for users' committees in Clause 19. Clauses 35 and 85 of the Decentralization Regulations laid down in 1984, stipulate that the committees would be responsible for the the operation and maintenance of rural projects and for the collection of taxes levied on services delivered by the project. This would institutionalize a pattern of self-reliance in the rural development process.

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Focus of the Study

The study focuses on the Gadkhar Irrigation Project Water Users' Committee. It assesses the Committee's capacity for:

- maintaining harmonious plural memberships;
- distributive equality across command units; and
- sustaining the irrigation system.

The Project Committee is jointly managed by panchas, public personnel, and users' representatives. There is a complex mix of political, bureaucratic and socioeconomic influences in the organization, which manages the physical structures that control water distribution and the irrigation users' behavior.

Objectives

The major objectives of the study are to:

- examine relationships among the users' representatives, panchas and public personnel involved in the Project Committee, and the effect of these relationships on their ability to carry out the tasks required;
- assess the capacity of the command units in terms of their accessibility and the extent of the Committee's equitability in distributing irrigation resources;
- identify the relationship between the status of the system and the Committee's ability to meet the system's maintenance requirements.

Study Process

Comparative analysis was used on information primarily gathered from organizational groups. Three groups were tentatively identified to meet the first objective of the study: the users' representatives, panchas, and public personnel involved in the Committee. The first group was categorized into classes in terms of land holding, ethnic group and location status. Panchas were divided into incumbents and land holders. The public personnel were from agricultural and irrigation sectors.

To meet the second objective, the general users were taken as the reference group. They were organized into command units in terms of each unit's access to the irrigation facilities: head, middle and tail.

For the third objective, attitudes of members of organizational groups towards resource mobilization, to operate and maintain the system, was identified. Information was sought on the formal (government) and informal (users) systems of operation and investment management. Members' attitudes towards public property, sanctions, and awareness of the status of the system vis-a-vis their values and expectations were ascertained.

The study was mainly empirical. All the members of the Water Users' Committee (WUC), 20 percent of households in the command area (20 house-

holds each in the head, middle and tail units of the command, chosen at random from lists obtained from the Sub-Divisional Irrigation Office in Battar, Nuwakot), and relevant persons associated with the system were separately interviewed. Participant observation was used to gain insight into the workings of the Committee. Gadkhar Irrigation Project was visited twice, in June and August, 1986. Secondary data was collected from the WUC's Minute Books, the DIHM (Department of Irrigation, Hydrology and Meteorology), the Central Region Irrigation Directorate, and Bhattar Irrigation Sub-division Office (ISO). Despite repeated efforts, data on watercess collection could not be obtained.

PROJECT BACKGROUND

Gadkhar Irrigation Project (GIP) which covers 105 ha. of land, lies in Choughada Village Panchayat of Nuwakot district, in the Central Development Region of Nepal. GIP is 12 km south-east of Trisuli, the district headquarters. Trisuli is linked to Kathmandu by a 70 km secondary highway, built to transport materials and labor for the construction of the Trisuli Hydel Plant in 1965. Gadkhar is difficult to reach by vehicle, especially in the monsoon, as there is no bridge over the Tadi River which separates the village from the highway.

External Assistance

GIP was an offspring of Rasuwa-Nuwakot Rural Development Project, financed by the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD) through the World Bank. These two funders provided 67 percent of the irrigation construction costs for GIP. The other third was borne by His Majesty's Government of Nepal (HMG/N). The total project design cost was NRs.2,367,510. IDA/World Bank had also initially identified the Tadi and Likhu river basins as potentially able to support irrigated agriculture (IBRD/IDA, 1976). The design construction and implementation of GIP were done under the umbrella of the DIHM.

The construction costs of GIP were NRs.2,946,743 (Table 1). They were over 24 percent higher than the project design costs. Construction was started in 1979 and finally completed in 1982.

Table 1. Initial Costs of GIP (NRs.)

Year	Construction Costs	Design Costs
1979	172,813	2,367,510
1980	2,033,892	-
1981	490,537	-
1982	249,551	-
	-----	-----
Total	2,946,739	2,367,510

Source: Project Report

The World Bank also contributed 67 percent of the costs of project maintenance and renewal in the first year after the official completion

(1983) of the construction works, as the originally agreed five-year term of the Rasuwa-Nuwakot Project was extended to seven years. This became necessary because several projects under the Rasuwa-Nuwakot RDP were incomplete. After 1983, HMG bore the entire maintenance cost of GIP through its regular budget.

Maintenance Costs

Between 1983-86, a total of NRs.977,651 was invested in project maintenance and renewal works (Table 2). Annual recurring costs of NRs.41,000 had been estimated at the design stage. Over this period, the per ha. average maintenance and renewal costs were NRs.2,328. This increased substantially with the additional cost of an increasingly frequent labor contribution. The WUC mobilized 1637 people in 1984, 795 in 1985, and 398 by August 1987, with a monetary value over three years, at the locally prevailing daily wage of NRs.15, of NRs.42,420. This was kept separate from the irrigation service fee which the users were supposed to pay each year (NRs.6.16 per two crops, per ropani). If the Bhattar Sub-divisional Irrigation Office (SIO) made a complete collection, it would not be more than NRs.12,936. The users also bore the cost of a panipale (water guard), who was paid one pathi of grain (approximately 3.6 kg.) through the WUC.

Table 2. Maintenance and Renewal Costs of GIP (NRs.)

Year	Released Amount	Maintenance/Renewal	Recurring Design Costs
1983	139,500	131,200	
1984	320,000	236,811	41,000
1985	200,000	159,640	-
1986	450,000	450,000 **	-
	-----	-----	-----
Total	1,109,500	977,651	41,000

** Total not available; it has been assumed all will be spent.
Source: Project Report

INTERRELATIONSHIPS AMONG MEMBERS OF THE WUC

The first WUC was constituted in 1980 to assume responsibility for operating and maintaining the irrigation system. Specifically, it was to set and enforce policies relating to water use (Peabody N.S., 1983). It was formed primarily through the engineer at the Bhattar ISO/DIHM, who was implementing GIP.

The farmers' assembly, held at the local bahun chautara (public platform named after the Brahmin community and built round a pipal tree), was presided over by the pradhan pancha of the village. He was unanimously elected chairman, and 14 others, including a vice-chairman and member secretary, were also chosen. The irrigation engineer, overseer, and agricultural assistant were invited to attend.

Composition of the WUC

The pradhan pancha was a Brahmin, traditionally considered to be a

higher caste. He lived in the head unit of the command, that included an elite horticultural estate, and was populated mostly by big landowners. The vice-chairman of the Committee shared these circumstances. He was different from the chairman only in that he was not a pradhan pancha. In contrast, the member secretary, although a member of the village panchayat, was a landless, Newar tenant (Newars are traditionally considered to be the most business-oriented caste).

There were three Brahmins, eight Rais, one Chhetri, one Newar, and two others on the Committee. Four members were panchas; the rest considered themselves more users' representatives than panchas. There was no formal representation of public personnel in irrigation or agriculture.

Relationships among members of the Committee were characterized by rank indiscipline. The vice-chairman was involved in more than one deliberate breaching of the Branch II canal at the head end, in order to divert water to his farm. No irrigation personnel--panipales or the overseer--reported such cases in the beginning. The vice-chairman never fulfilled his promise to repair the breach, and the Committee could not impose any penalties on him as they had not yet laid down the penalties for various crimes that pertained to irrigation. The Minute Book, written in 1980, simply agreed that those who tampered with the system should be dealt with severely. So the irrigation engineer ordered his personnel to repair the canal breach out of the maintenance budget. It seemed that they dare not displease the panchas and they had good reason for this. Pancha support was crucial in that year of the National Referendum in which the people had to decide between Panchayat Polity and the Multi-Party System. They also did not believe that the Committee chairman would repair the damage himself, so there was no point in making a fuss. They could not wait indefinitely, as the water had to be regularly supplied throughout the command area. Finally, this particular vice-chairman was a key user and had been very hospitable to them. The irrigation personnel became increasingly dependent on him, and the more the local farmers saw them hobnobbing with this particular pancha, the more they suspected them, which in turn, pushed the irrigation personnel further towards the panchas. The history of the area may throw light on how such a situation developed among a majority of the local farmers.

History of the Area

The head unit of the command used to be a large mango grove. It belonged to the Rana family. As it was a Rana estate in the horticultural sense, the Birta Eradication Act of 1959 did not affect the estate ownership. On the death of the Rana owner, the estate was divided into seven equal parts for his six sons and his wife.

The estate and its residential facilities were a prohibited area to the Rais, who lived on the periphery of the estate. This was because they suffered from blood diseases, mainly due to malnutrition, and often contracted conjunctivitis. They were considered unclean. The estate became a forbidden shangrila to them.

The death of the sole owner, the fragmentation of the estate and the new laws stripping the Ranas of their power, caused anarchy in the area. People tried to encroach upon the estate from all sides and take as much of the horticultural property as they could. A Newar business-

man, who was a pradhan pancha, and a Brahmin pancha took the opportunity to convince the heirs to the estate, who lived in Kathmandu, to dispose of their part of the estate, suggesting that they could not maintain their ownership rights over it effectively. The Newar managed to pool enough resources from several buyers to purchase a major portion of the estate for himself. Then he cleared the horticultural resources for commercial gain, and resold the estate in plots to those buyers from whom he had already collected money. These buyers were predominantly Brahmins and Chhetris.

The Brahmin pancha, on the other hand, purchased part of the estate directly from one of the deceased owner's sons. The estate was populated by Brahmins and Chhetris, who filled the socioeconomic vacuum left by the Ranas. The Rais did not gain at all from the changeover.

The Rais' Point of View

The Rais felt that the project was for the benefit of the elite group living in the head unit of the command. In 1979 they opposed the project as they felt that what was a communal river and supply of water would become tied up in a system that excluded them. When construction of the intake was due to start, it was wildly rumored that a human sacrifice would be offered. When a chicken was offered, its blood stain was interpreted by some as the blood of a baby. This was all to discourage the project from going ahead.

The way the project developed in its initial years (1979-81) only strengthened the Rai's notion that it was to serve the local elite. A farmer was deprived of his water mill upstream because it was using water from the Likhu River. The reason given was that if the mill was allowed to operate, there would not be sufficient water for the project. He thinks otherwise. At the design stage, the expatriate engineer said it was possible to continue supplying the mill. The farmer also lost part of his land to the canal. He has not yet received compensation.

The Rais noted that in the first two years of the project's phased water delivery, most of those who practiced irrigated agriculture were head unit, high caste people. Rais were pressured into selling good pieces of land that were favorably located in terms of the irrigation networks. The buyers were quick to anticipate an increase in the value and agricultural productivity of the land. It has been estimated that the Rais lost over 10 percent of their land to high caste immigrants.

The Committee chairman, who was an immigrant himself, seemed reluctant to open cases of illegitimate water diversion by his Committee colleagues for public hearing, or to punish the guilty. It was generally believed that there was an understanding between the vice-chairman and the chairman, both were local politicians, and if farmers were punished, it was on a case by case basis with no standard penalty measures. This became evident in a case where the Committee, within seven days of its formation, effectively fined two users of Branch III canal NRs.175 for breaching the canal lining and diverting water illegally. This has remained an unparalleled precedent.

The Committee's failure to punish its own wrong doing members affected its legitimacy. The head unit farmers enjoyed licence to tamper

with the canal anywhere and take quantity of water they wished, whereas it was difficult for the middle and tail unit Rais to get the water they needed. The situation divided the farmers both at the command level and at the Committee level. Many members began to nourish a feeling that the chairman and vice-chairman were siding with the high castes and bullying the lower ones.

The engineer would informally allow high caste influential farmers to open new outlets unilaterally. He was inclined to by-pass the Committee presumably because he thought that it could not participate in technical decision-making. He was more concerned with implementing the covenant that had been jointly signed by HMG/N and the external aid agencies. The relevant provision stipulated that it was obligatory for Nepalese to levy irrigation service fees for the project. However, this required some kind of user organization.

The overseer was responsible to the engineer and to the Committee. He found that he was not in a position to remove several larger-than-permitted four inch polyethylene pipes in the distribution outlets. He also had to repair a canal that was illegitimately breached by a politician on the Committee. For him, it was impractical to antagonize the Committee's influential high caste pancha leaders.

The relationship between the Committee and the water users often rendered Committee decisions on water allocation and enforcement of sanctions against rule violators redundant. The Committee was not able to bring its plural membership together to realize its purpose in a positive way. Although eight out of 15 members were Rais, they did not like collusion and were too weak to correct the imbalance.

Another general assembly of users replaced the first committee with a new one in 1982. By this time, the village panchayat had a new pradhan pancha and the new committee was chaired by him.

Subsequent WUCs

The new chairman was a Rai who therefore represented the majority ethnic group in the command area, although this time they did not constitute the majority on the Committee (4 out of 11). He himself held less than ten ropanis (one ropani equals 0.13 acres) of land in the command. He was the first pradhan pancha to be elected by universal adult franchise, a system adopted in 1980 when the Third Amendment of the Constitution became effective.

The controversial chairman and vice-chairman of the first committee both got membership positions on the second. The tenant Newar member-secretary became vice-chairman. His earlier position was taken by a Rai, who owned 13 ropanis of land in the middle and tail units of the command. The leadership pattern set by the second Committee continued until the fifth was elected, with only one major change in the position of secretary. The Brahmin chairman of the first committee was made member secretary of the fifth committee, and the Brahmin vice-chairman of the first was appointed its adviser.

This reorganization probably reflected the users' concern to make the WUC ethnically broad-based and make it a more representative agency

of cooperative relations among the communities that managed land in the head, middle and tail units. From a socio-organizational angle, this was an outstanding effort to sustain the users' divergent irrigation interests in terms of ethnic group, land ownership, and geography.

A Perspective on the Last Five Years

In the five years since 1980, the water users of Gadkhar have elected five WUCs: a total of 58 members. A few were elected several times (Table 3).

Table 3. Re-election of WUC Members

Number of Times Elected	Number of Members	Total Members
5	2	10
4	3	12
3	1	3
2	10	20
1	13	13

Source: Field Study

One of the (two members who were elected to all five committees, was a big Brahmin land owner from the head unit and the other was simply a small tenant. The resignation of a pradhan pancha as chairman showed that chairmanship of the Committee was not strictly ex-officio to him. Irrigation management required more of a functional farm-based role which a person in local government could seldom play. However, a cooperative relationship between the village panchayat and the Committee was essential for the WUC to be effective.

Undisciplined water users may have been elected once to the Committee. This was an attempt to make them accountable for a cause that called for collective cooperation and equitable irrigation management. If the users felt that these farmers had improved as a result of Committee membership, they may re-elect them. However, in the case of uncertain members who were repeatedly re-elected, the users remained tolerant of behavior which did not conform to the norms of equitable irrigation management. The reason for tolerance probably had more to do with the users' inability to do without these particular people, who retained the influence of the elite in the command area.

A tradition of giving almost ex-officio membership to the Agricultural Technical Assistant (ATA) and the irrigation overseer, had to be broken in later years. The users were interacting with these people less and less. The first overseer and ATA, who were members of the second and fourth committees respectively, were transferred to other areas and their replacements were not as widely liked. The present two are unaware of the background of the situation, and do not know the users very well. They have more bureaucratic interests.

Table 3 shows that in the last five years the total membership of the five WUCs was only 29. Public personnel may be excluded, as their

role has become redundant, taking the effective membership down to 26. These members are listed in Table 4 which shows that in the last five years: a majority of Committee members were politically affiliated (54 percent), although 57 percent were non-incumbent and only 43 percent owned large pieces of land mostly at the head end of the command; Rais constituted the largest single group (50 percent), followed by Brahmins (19 percent), Chhetris (11 percent), and Newars (8 percent); most members were big landowners, with 31 percent and 27 percent in middle and small landownership strata respectively; and Committee members equally represented the different locations in the command.

Table 3. Distribution of WUC Members

Political Affiliation:		Landownership:	
Pancha	14	Big (Over 20 ropanis)	9
Non-pancha	12	Medium (10 - 20 ropanis)	8
		Small (4 - 10 ropanis)*	7
Caste:		Tenant	1
Rais	13	Landless	1
Brahmins	5		
Chhetris	3	Location of Holding:	
Newars	2	Head	13
Others	3	Middle/Tail	13

* No WUC Members were marginal land holders (less than 4 ropanis)
 Source: Choughada Agriculture Subcenter

No important relationship between ethnic identity and land ownership status was noted (Table 4). The Rais made up 23 percent of the big landholders, and the Brahmins were equally divided between the big and medium landholders. Each caste group had at least one politically affiliated member, except the Chhetris. Both Newars were panchas (Table 5).

There was a relationship between members' ownership status and the number of times they were elected to the Committee. Though one tenant and one big landowner were elected to all five Committees, it is clear from Table 6 that more farmers from the medium and small land ownership bracket were repeatedly re-elected than from the others.

Table 4. Ethnic Identity and Landownership Status of WUC Members

Caste	Landownership Status				
	Big	Middle	Small	Tenant	Landless
Rais	6	4	3	-	-
Brahmins	2	2	1	-	-
Chhetris	-	1	2	-	-
Newars	-	-	-	1	1
Others	1	1	1	-	-

Source: Field Survey

Table 5. Ethnic Identity and Political Affiliation

Caste	Pancha	Non-pancha	Total
Rais	7	6	13
Brahmins	3	2	5
Chhetris	-	3	3
Newars	2	-	2
Others	2	1	3

Table 6. Landownership Status and Number of Times Elected

Landownership Status	No. of Members	Elected:				
		1	2	3	4	5
Big	9	2	6	-	-	1
Medium	8	3	3	1	1	-
Small	7	4	2	-	1	-
Tenant	1	-	-	-	-	-
Landless	1	1	-	-	-	-

Source: Field Survey

COMMAND UNITS: CAPACITY AND IRRIGATION ACCESS

Most land that was supplied with irrigated water was tar (flat, high land), lies between by two rivers--the Tadi and the Likhu. The former flows through the north of the command area, and the latter, the water source of the project, flows through the south side. Ethnic groups were not evenly spread over different quality land in terms of access to irrigation. ability to use fertilizer, soil texture and topography.

Ethnic Groups and Land Distribution

Although most of the households in the command area are Rais, only 27 percent of them lived in the head unit. All the Brahmin, Chhetri, and Newar households were located in the head unit (Table 7).

Table 7. Caste Households by Location

Caste	No. of Households	Percentage	Head End	Middle/Tail End
Rais	110	54	30	80
Brahmins	30	15	30	-
Chhetris	18	9	18	-
Newars	17	8	17	-
Others	28	14	11	17

Source: WUC Records based on collection of paddy contribution per household towards the wages of the panipales. There are between 15 and 20 landless households in the command.

Choughanda Agricultural Subcenter Official Report of 1986 gave the following socioeconomic data on the Gadkhar command. There were 230 households of 1610 people. Small landowners made up the largest group (45 percent), followed by marginal landowners (24 percent), medium landowners (20 percent), and big landowners (4 percent). Five percent were landless and the average landholding size in the command was 0.5 ha (10 ropanis), with the highest average at 0.83 ha and the lowest at 0.25 ha. These figures exclude land owned by Chhetrapal School and land under guthi (socio-religious trust).

The head unit of the command was mostly sand/clay mix soil. Some areas were sandy and full of stones, especially near the Tadi River. The middle unit was more sandy and the tail end mostly clay.

Chemical fertilizers were used more in the head unit, possibly because the high caste inhabitants had more money. As a result of the fertilizer, the head unit was producing the highest yields of wheat (3 tons per ha), but equal quantities of summer paddy as the tail end (4 tons per ha). The middle unit could only produce half of this and it was also behind in the production of wheat and maize. Maize production remained low in all areas, near the pre-irrigation figure of 1.4 tons per ha (Table 8).

Table 8. Command Units and Agricultural Productivity (tons per ha.)

Command Unit	Summer Paddy	Wheat	Maize
Head	4.0	3.0	1.5
Middle	2.0	1.5	1.0
Tail	4.0	2.0	1.5

Source: WUC Report 1986

What emerges from the findings is the fact that the Gadkhar command head unit was socially and economically dominated by Brahmins and Chhetris. They were strategically placed in terms of access to irrigated water. They used chemical fertilizers to compensate for the chemical deficiencies in the soil. The Rais were overwhelmingly the largest group in the middle and tail units, but their landholdings were smaller than those of the Brahmins. Some of their land was less productive than the head unit soil, but some had a clay-based soil and could match the latter's paddy and maize production. The tail unit farmers could not afford to use chemical fertilizer--if they could, they would probably substantially increase summer paddy yields.

First Access

Almost six months before the formation of the first WUC, GIP reached a stage in construction where water was being released onto two ha of the command. Only one Brahmin, at the head unit, who subsequently became the vice-chairman of the Committee, prepared paddy seedlings for plantation using this water. He had a bumper crop that year.

In the second year, water was released to 28 ha and then to 65 ha in the command. The Committee meeting held in 1980 set rules for rotational allocation of water, because it found that there was too little water for continuous irrigation throughout the command. Water would be released through one branch canal at a time. It would be distributed through the set tertiary pipe only. Distribution channels were to be built after consulting official irrigation experts. The Committee also agreed that as there was not enough water, a ceiling would be fixed on each farmers' area of irrigated agriculture.

The rotational allocation schedule was for both wheat and an early paddy crop, though the latter was under experimental, partial cultivation only. It was decided that all farmers should grow summer paddy on 25 percent of their land, and traditional maize and millet crops on the other 75 percent (Committee Minute Book, 1980). These decisions were rarely enforced. Farmers took water from wherever they could and cultivated summer paddy over large areas, despite the ceiling. This resulted in a shortage of water and unequal distribution of what was available.

Allocation Schedules

At a second major meeting, held in 1981, the Committee decided to change the four-day rotational schedule to a five-day one, as the earlier one could not meet the users' requirements. It also elaborated on the method for water allocation in each branch canal area. Ostensibly for equity purposes, priority was given to tail unit households.

The second water allocation schedule was an improvement over the first: it was more equitable in terms of Branches I and II and Branches III and IV; water allocation priority was given to the tail unit users; and the area to be served was delineated geographically.

Unfortunately, these improvements were only put down on paper; the four-day allocation schedule continued in practice. This was apparently because of an understanding between the Committee's leadership and the field irrigation personnel. The four-day rotation schedule had a built-in bias towards Branches I and II. The two Branches, which irrigated a total of 31 ha, were given water for 48 hours, whereas Branches III and IV, which irrigated a total of 69 ha, were also given water for 48 hours. There were widespread complaints from tail and middle unit farmers of Branches III and IV of not getting enough water. Possibly more revealing was the fact that the tail unit farmers of Branches I and II also complained about the erratic supply. The Committee leaders--the chairman and vice-chairman--were head unit users of Branches I and II. A new four-day rotational allocation was activated that was to be effective from the 1982 summer paddy, because of water scarcity (Committee Minute Book, 1981). By this time, irrigation water could potentially reach the entire command area.

The allocation bias continued, though this time the tail unit was given equal chance to get irrigation services. They continued to complain about the illegitimate canal breaches and water theft in the head unit, and the erratic supply.

On the advice of the engineer, the Committee decided that summer paddy should be planted on 50 ha of land, and millet on another 50 ha.

No user heeded this suggestion and they continued to grow paddy on larger than prescribed areas, stealing water and illegitimately breaching canals to do so. Later, the Committee admitted that it could not implement its decision. It felt that the intake of the system was too low, so it was suggested that the Irrigation Subdivision should increase the system's capacity. At that time, they decided on a new rotation schedule which was unique in that it demarcated command units into more specific sub-command entities. For example, of the 32 hour supply given to the tail unit, 16 hours supply specifically flowed into one area of the tail end and the second 16 hour supply flowed into another.

Due to inadequate summer rain, the prevailing rotational schedule was inadequate for the fields, so the rotation was lengthened by another day. Branches I and III would receive water for 96 hours and Branches II and IV would be supplied for 120 hours, a nine-day schedule.

Despite these measures, the problems of water theft and canal breaches continued, so the WUC decided to form a sub-committee for supervision and control on each branch canal. In a later meeting, these branch level sub-committees were reshuffled and authorized to punish those found guilty of water stealing and canal breaches. The punishment for each crime was clearly fixed in the form of fines ranging from NRs.100 to NRs.500. Private, overlarge, channel level distribution pipes were removed. The nine-day rotational schedule was continued, but the Committee decided to change the alliance: Branches I and II made one group and Branches III and IV made the other. Branches I and II had water for 96 hours, and the other two had it for 120 hours.

In 1984, the nine-day schedule was replaced with the five-day one which had been used in 1981. Within 30 days the decision was amended as the Committee tried hard to adapt to changes in water availability. The nine-day schedule was brought back and Branches I and IV were grouped together to receive water for 120 hours and the other two got water for 96 hours. Specific details were laid down for each branch.

The WUC did not have problems of illegitimate water diversion in the command area alone. Farmers who had developed cropland just below the five kilometer idle main canal were now using water straight from the main canal. The guards could not control this so the WUC let it be known that any person who informed on a culprit would receive 25 percent of the NRs.500 fine.

It also decided to dissolve the branch level sub-committees on the grounds that each branch had a representative on the main Committee. For rotational purposes, the alliance of the branches was maintained as that of the previous year. However, the allocation time frame was reduced to four days--two each per alliance--but during the planting of summer paddy, farmers were left free to take water when it was needed. Those who had already planted could take water only during night hours.

WUC Persistence

The WUC's persistence in finding a rotation pattern that would allow a scarce resource to be distributed equitably was impressive. It was at pains to admit that despite these efforts, "conflict and tension during rotational water distribution was increasing" over the years

(Gadkhar households were divided on the question of whether discipline levels had improved or declined). A farmers' general assembly was convened in 1985 to discuss the issue and a resolution was made. The resolution, on an experimental basis, provided a new role for the panipales. Now, their main duty would be to distribute water equitably. It was a seasonal job as they were solely employed at summer paddy time when the conflict for water was at its highest. As before, they received their wages in the form of paddy. Each household would supply a pathi of grain which was divided among the eight panipales.

The panipales were a remarkable innovation, but although the middle and tail unit farmers were happy, the head unit farmers felt that panipales were a useless investment. In anticipation of such an attitude from the higher castes, the assembly nominated a high caste, head unit farmer, who was former vice-chairman of the Committee, as adviser to the present Committee on water distribution. The new Committee found the panipales to be useful and satisfactory so the arrangement was continued through 1986. However, some problems arose. Head unit farmers gave incorrect quantities of grain as payment for the panipales. The panipales felt also, that some of those they had caught stealing were not punished and therefore that the job was not worthwhile. The head unit farmers thought that the Committee was simply shifting its responsibility for equitable water distribution onto some petty wage earners.

Communication

The users were not uneasy about so many institutional changes and innovations. They were aware when they were entitled to water, the time boundaries and limitations or constraints on access. This shows that the WUC maintained close communication with the farmers and made sure that they understood every decision.

The Committee introduced all the major changes at the farmers general assembly which functioned as a mass communication mechanism. It was elected, and structured in a manner that allowed representation of all four branch canals. Whenever the Committee made an important decision regarding water allocation, representatives from each branch would brief their fellow farmers. In addition, the panipales could inform farmers of any decision that related to them. All meetings and general assemblies were recorded in a Minute Book operated and maintained by the member-secretary of the WUC. All decisions were taken formally: an agenda would be fixed by the Committee, a date and place agreed upon, and the signatures in the Minute Book of all those who attended.

There was also an informal communication system. The Committee members were easily accessible in the tea shops during their tea-breaks. Social gatherings provided relaxed moments for users to communicate their grievances to a member, and for the Committee to let them know a point of view or more detailed reasoning behind a decision.

DEVELOPMENT OF USER PARTICIPATION

All WUC members perceived labor mobilization for system maintenance as critically important. It was increasingly felt that the Committee substantially filled the serious lapses and gaps in the public bureaucracy. It was becoming more involved at all levels of system management.

One year after the system went into operation, it became apparent that a new feeder channel had to be built every year, to feed water into the intake. The Likhu River had migrated almost one km to the south. The Committee had to mobilize villagers to do the task. Simultaneously, they had to perform the task of cleaning landslide debris out of the main canal and regular field canal maintenance. The Committee became more involved in maintenance each year, as the problems and defects of the system were revealed. The original design had not included structural facilities to drain excess rain water, and mud slides caused by deforestation on higher reaches of the main canal had made the canal portion with buried hume pipes more unstable. In 1986 during the planting of summer paddy, a section of buried hume pipe blocked the flow of water. The WUC declared urdi (an emergency), and massive labor mobilization took place to replace the cramped pipes with new metal ones. The 34 households that refused to contribute labor were fined NRs.15 each (the prevailing daily wage rate per person). An overseer stood more as an authoritative witness than an active participant.

The increasing preoccupation of the WUC with canal maintenance, which was considered the responsibility of the Bhattar Sub-division, had an adverse effect on field channel maintenance and supervision. On several occasions, branch canals were left uncleaned. The Committee was aware of the situation and so organized the system of sub-committees for each branch canal mentioned earlier. Then they proposed to the Subdivision that it place its own dhalpales (canal guards), whose task it was to supervise the main canal repairs, thereby ensuring a continuous flow of water. The WUC members felt that this way they would have effective control over dhalpales, who would discharge the tasks more effectively, and prevent leakages and blatant water theft from the main canal.

The Committee had also tried to improve water distribution management at the farm level. In 1985 they had started using panipales, who were entrusted with the responsibility of equitable water distribution at the farm level, and had developed a workable system of paying them.

Awareness

WUC members were also aware of the state of the Gadkhar Irrigation Project. They were aware of organizational problems and that the physical state of the Project was seriously interfering with the Committee's potential for organizational growth.

An overwhelming majority of WUC members mentioned the following detrimental physical characteristics of the Project:

- bad links between the intake and the river;
- narrow canals that cannot contain and convey monsoon water;
- emergence of new cropland between the river and the intake;
- emergence of 20-25 ha of agricultural land just below the five km idle main canal;
- indiscriminate insertion of pipes of different sizes by irrigation officials; and

- unstable, slide-prone sections along the main canal.

The project's physical state had been largely responsible for the promotion of certain organizational issues. The Committee was able to handle many of these issues, but not all. It mobilized the necessary labor every year to maintain/build a link canal or feeder channel between the intake and the river, and to restore unstable sections of the main canal destroyed by landslides. It took the initiative in demanding first rights to the water from farmers who had started to cultivate the area between the intake and the river.

However, the Committee was not so successful in preventing the indiscriminate insertion of varying sizes and qualities of pipes. This reflected a certain degree of manipulation, as the more influential, high caste farmers laid the biggest pipes, and therefore received the most water. With the introduction of panipales, the Committee had tried to control the release of water through the pipes, whatever the size, so that every farmer had three inches of water covering their summer paddy, but they did not exercise enough control.

Structural problems hampered efficient water conveyance and equitable water distribution. WUC members felt that the initial structural design was at fault and stressed that even though the water in the Likhu River was sufficient for nine months of the year, they were not getting enough water to irrigate their fields.

Irrigated farming below the idle main canal was diverting water illegitimately to farmers outside the command, adding 25 percent to the irrigated area. The Committee repeatedly suggested ways to tackle the problem. They pressed the dhalpales to be more vigilant, but during the night they could do nothing. The Committee tried a conciliatory approach at the last 1986 meeting. They offered farmers an agreement which would ensure access to the water every 96 hours. This has come into operation recently and seems to be working, but the Committee has found itself supplying a much larger area than originally anticipated.

Attitude

Members' attitudes towards GIP as public property ranged from extreme negligence to extreme affability. No member was indifferent. Those who had been elected to the WUC more than once were well-disposed towards the project. They felt that it deserved care and attention as it enhanced the welfare of the farmers, especially those on the Committee! Other farmers were ill-disposed towards GIP. They interpreted the project in terms of individual benefits and often felt that it hampered agricultural practices without supplying sufficient water. It meant more time and energy had to be spent on maintenance and repairs, which were not always successful.

In the initial years of water delivery, some members had tried to monopolize the water supply by illegitimately breaching the canal, and ignoring their Committee responsibilities. The irresponsible leaders of the first WUC were re-elected simply as members, to encourage them to feel responsible. It was felt that these people would cause more trouble if they were "left loose". This was a pragmatic approach, but some users complained, often rightly. Some of these members continued to divert

water illegally to their land, but their Committee status did make them more vulnerable to exposure as they were more in the public eye. Those members who were committed to their responsibilities were retained to balance the others.

Most members who have repeatedly been elected to the Committee feel that it needs authority to impose sanctions on those who tamper with the system. It does not have sufficient power to punish users effectively, nor can it impose sanctions on those who clearly transgress or disobey Committee decisions and rules. These feelings are backed by evidence:

In 1982, acting on a report filed by the overseer, the WUC decided for the first time to write to the village panchayat asking them to punish the farmers responsible for damaging the canal lining. They requested the panchayat to deal also with farmers who were using water when it was not their turn. Nothing happened.

In 1984, the Committee identified two users who had damaged the canal lining and decided to take severe action against them. They would fine people in proportion to the damage done. Nothing happened.

In 1985, panipales reported that a farmer was diverting water to his land. The person complained that this was untrue and said to discredit him. He demanded a thorough investigation. The Committee accepted the user's contention, but nothing happened.

In 1986, panipales again reported illegal diversions of water. The Committee imposed a fine of NRs.50 on each of the culprits, but the latter did not pay. The chairman wrote to the Chief District Officer (CDO), for help to implement the decision. The CDO has not yet replied.

Expectations

WUC members have had high expectations of the project for a long time. That many have remained unfulfilled is seen as synonymous with the collapse of the irrigation system.

A major expectation related to the construction of a new intake canal about one km upstream from the existing intake point to solve the problem of the gap between the latter and the river. Another pertains to increasing the capacity of the system. Water scarcity during the dry season was understandable, but non-availability during the summer monsoon months was intolerable. Members wanted larger hume pipes to be inserted along the canals to increase the capacity of the system. A suggested alternative was to link Gadkhar with a proposed irrigation project upstream at Simara. If Gadkhar could receive all the drainage water from Simara, it would solve Gadkhar's perennial water shortage. In response to worries vocalized by the Simara farmers, the Gadkhar farmers ed that they could not possibly take over the Simara system because they would not be able to maintain it. If they did, they would be deprived of the technical supervision and assistance of irrigation officials and would therefore have no way of maintaining the structures that needed engineering expertise.

The farmers were wary of relying on the DIHM for assistance, even if they were assured of it. As one farmer explained, "even under the

present arrangement whereby the DIHM is responsible for the operation and maintenance of the project, it took three years for them to release a grant to repair main canal damage". Fulfillment of farmers' expectations is a pre-condition for more responsible participation of the users in joint management of the project. They were aware that when the King inaugurated the system, he expressed the wish that the users take over management of the system. However, he visited the area at a time when the wheat resembled a gigantic green carpet that covered all the serious issues beneath. There was no visible sign of conflict or manipulation.

Decentralization

Under the provisions of the Decentralization Act's Work Arrangement Regulation, and present policy level thinking, the GIP should have been handed over to the users for management. Legally, the users have to have the leadership of the pradhan pancha and should function alongside the village panchayat. The WUC has met all these requirements.

A team of DIHM personnel visited the project at the beginning of 1986 and suggested that Bhattar Subdivision hand the overall management of it to the users. This suggestion was also made earlier by the Raswa-Nuwakot Rural Development Project Coordinator and his expatriate advisers. However, due to the physical state of the irrigation network, both the users and their pancha representatives were unwilling to take it over completely. Irrigation officials related to the project also felt that it should not be handed over until it had been remodeled. Estimated of the cost of remodeling ranged from NRs.600,000 to NRs.2 million. According to the Sub-divisional Assistant Engineer, the project was in the "poorest shape".

From the outset, one of the problems was that the DIHM personnel never seriously took responsibility for the Project. This was rational thinking in that they were responsible for the initial construction but not for management or institution-building. When external funding dried up, the DIHM began to see the GIP as a burden, and the "handover" became an office slogan, but it was not accompanied by any serious attempt to do so. The Department was waiting for the second phase of the Rasuwa-Nuwakot RDP, when they expected to receive money to remodel the system.

At the remodeling stage, the entire process would have to go through a different institutional channel. Under the Decentralization Act rules, Nuwakot District Panchayat had to approve the resolution. It would then be referred to Bhattar Irrigation Subdivision for implementation (all field level developmental work agencies come under the District Panchayat Secretariat, in accordance with the provisions of the Decentralization Act). The District Panchayat has so far not touched the GIP as it is considered a central level project. In 1985, about 50 users approached the Local Development Officer with their grievances--the main one being the need for a new intake further upstream--but the District Panchayat Office could not respond in any meaningful way as the Project is beyond their jurisdiction.

Values

Throughout the years, Committee members have upheld certain values that will eventually have a far-reaching impact on the institution and

its future prospects:

- They have been continuous and untiring in experimenting with new rules and regulations for water allocation and distribution in an effort to adapt to the needs of the users and physical changes over time.

- They have steadfastly tried to make water distribution equitable, giving tail unit members priority and carefully selecting WUC members so that all farmers were represented.

- They have tried not to antagonize the high caste Hindu farmers who migrated to the area and took over strategically placed, good farmland, giving rise to sentiments such as "strong versus weak". The Committee's endeavors have helped the "weak" by giving them influential membership positions and by making sure the canals were roughly the same size. Tail unit productivity increased as a result.

- The Committee actively participated in system maintenance at all levels through massive labor mobilization and their belief that, irrespective of what is written in the Decentralization Act, they can manage the system only when the users and the DIHM cooperate to evolve a meaningful framework on which to build a capable institution.

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