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**COMMUNITY PARTICIPATION IN
IRRIGATION MANAGEMENT**

Case Study of Solma Irrigation Project in East Nepal

Mahesh Prasad Pant

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

STRENGTHENING INSTITUTIONAL CAPACITY IN THE

FOOD AND AGRICULTURAL SECTOR IN NEPAL

FOREWORD

This Natural Resource Management Paper is the result of a project, "Strengthening the National Capacity for Forest Security Sector in Nepal," funded by the Government of Nepal, the Royal Government of Bhutan (RGOB) of His Majesty's Government of Nepal, the International Institute for Environment and Development (IIED), and the International Development Cooperation Centre (IDRC), the World Bank, the International Centre for Integrated Mountain Development (ICIMD), and the Royal Government of Bhutan.

One of the key objectives of the project was to develop a problem-oriented research approach involving the participation of agencies of the Ministry of Forests and Environment, Nepal, and individuals in the field, including those who are active in the active professional organizations of the sector.

The purpose of this Natural Resource Management Paper is to make the results of the research available to a wider audience of students with advanced university-level education. It is also hoped that the findings will be useful to policy-makers and practitioners among policy-makers and practitioners which are suitable to the development of the sector.

The views expressed in this paper are those of the authors, and do not necessarily reflect those of the parent institutions.

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COMMUNITY PARTICIPATION IN IRRIGATION MANAGEMENT

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Mahesh Prasad Pant*

INTRODUCTION

Hill Irrigation in Nepal

Nepal has a high ratio of people to cultivable land. The mountainous terrain forces farmers to use marginal lands on steep slopes that are difficult to irrigate, and yet an increasing population demands intensive farming methods, for which irrigation is a crucial factor.

The hills are not easy to irrigate, but very little of the potential has been realized. An estimated 0.3 million ha of land in the hills could be irrigated; at present, only about 53 percent of that has been developed.

Government investment in developing irrigation in the hills has been negligible. To date, only six percent of the land under irrigation was developed by government agencies; the remainder was developed by farmers using local skills, knowledge and resources. Landlords of former times may have encouraged them, since paddy, the preferred and highest status staple, requires irrigation. However, a combination of government assistance to buy the necessary tools, and farmers' managerial skills is required for effective irrigation development.

Ownership of the system used to rest only with the group of farmers initially involved, who had invested cash/kind in developing it. Many such systems throughout Nepal are still functioning well compared with government managed systems (Pant, 1983; Howarth, 1980; MOA/APROSC/ADC, 1983; Yoder, 1985).

The Department of Irrigation, Hydrology and Meteorology (DIHM) usually undertakes medium and large scale schemes (more than 50 ha), and the Ministry of Panchayat and Local Development (MPLD) undertakes both the rehabilitation and construction of small scale schemes at the village panchayat level. The Farm Irrigation and Water Utilization Division (FIWUD) undertakes both small and large irrigation schemes. Agencies like the Small Farm Development Program (SFDP), Food for Work, Hill Food Production Program, ILO, CARE, and SCF (USA) are area specific, and have their own distinct approaches.

* Mahesh Prasad Pant was associated with the Kosi Hill Area Development Program (KHARDEP) prior to conducting this research. The research was done in 1984-85.

Special thanks go to the people of Solma, Arghauli and Chherlung for their participation in the program. No less important was the encouragement and support of KHARDEP personnel, in particular, John Dunsmore, Nick Foster, and Kamal Gautam. The cooperation of the Pakhribas Agricultural Centre was also well appreciated.

Through the DIHM, farmers need not contribute labor or cash for construction, but they have to pay a tax on the water. In the case of FIWUD, project implementation is the responsibility of one or two field staff working in cooperation with a consumers' committee. Beneficiaries must bear 25 percent of the project cost in cash and labor.

The MPLD implements its projects through district panchayats and district technical officers. The latter usually employ one engineer and a few overseers. The Local Development Officer (LDO) is the MPLD representative in the district, and provides administrative support. Beneficiaries have to contribute at least half the project cost in labor.

The performance of all these governmental agencies has remained poor both in terms of physical achievements and in researching new approaches. The main reasons for this have been unsound planning, weak implementation capabilities, neglected operations and maintenance, limited energy sources, and fragile hill ecology (ADB/HMGN, 1982). In particular, DIHM lacks procedure; FIWUD is constrained by manpower shortages; MPLD shows political bias in the selection and implementation of projects and its branches have neither the commitment nor the ability to encourage local participation and to maintain technical standards.

Although the government has neither sufficient resources to harness all the irrigation potential, nor the ability to mobilize local resources, the farmers' dependency on it is increasing. This is because more grants are being made available, and because irrigation is increasingly being viewed solely as an engineering problem that needs to be solved by trained technicians.

Despite growing awareness of the need for participatory approaches, more action based research into irrigation development needs to be carried out (Pradhan, 1982). This "action-study" addressed itself to the problem, particularly looking at KHARDEP (Kosi Hill Area Rural Development Program) irrigation projects.

Objectives of the Study

This study documents some of the experiences of the KHARDEP project which aims to encourage beneficiaries of irrigation development schemes to participate enthusiastically before, during and after project implementation, and to smooth implementation of proposed irrigation schemes by stationing a worker at the project site to report regularly on progress. More broadly, the study aims to:

- promote wider participation by the beneficiaries both during and after project implementation;
- observe and document the interaction between government and the local people in project implementation;
- liaise between beneficiaries and the agencies responsible for project implementation and to report regularly on project related problems in the field;
- help farmers to devise an equitable system of water distribution.

Methodology

Since the main emphasis is on action and monitoring the problems of project implementation, the use of structured questionnaires and household enquiries was limited to determining land area, ownership, family size, food sufficiency, cropping patterns and existing irrigation sources. Data on landholding given by the farmers was checked against official land area records available at the Cadastral Survey Office.

A total of four months was spent at the project site. At the end the farmers visited west Nepal to see some of the community managed systems there; they could examine the irrigation process and the extent of community participation in management at the local level. A short training course on vegetable farming was organized at the Pakhribas Agricultural Center (PAC) to teach farmers to maximize the use of canal water during the winter and to increase cash incomes.

Selection of the study site (Solma village panchayat in Terhathum District), was made in consultation with KHARDEP officials. Though some of the benefitting households had cultivated land both inside and outside the command area, only the area under the canal command was considered in the analysis. Therefore, as the average farm size figures do not reflect farmers' actual holdings, expressed food sufficiency was taken to be the true indicator of wealth. Also, because of the strong influence of the ethnic factor in determining social relationships and interaction, analysis was by ethnic group. They were grouped according to social hierarchy and behavior: high castes include Brahmin and Chhetri; Newar formed a single group; and the rest--Limbu, Rai, Tamang, Magar, and untouchables--formed one group.

The study area was divided into Area A and Area B on the basis of water requirements and the potential for increasing crop yield. In general, the water requirement in Area A was lower than in Area B; Area B, which made up the larger portion of the command area, had an acute shortage of water but a high potential for increasing cropping intensity. The small area at the head of the canal was ignored because no water from the canal was needed there.

PROJECT ARLA

Location

Solma is situated southwest of Terhathum bazaar, the district headquarters of Terhathum district. It is two hours walk from Terhathum bazaar and six hours from the nearest roadhead, Jorpati.

The KHARDEP irrigation scheme at Solma covers part of Ward No.5 and most of Ward No.8 (Ratmate and Megha) and 9 (Kalimati and Hattiaahal) of Solma village panchayat.

Village Social Structure

The lower part of Solma Village Panchayat (VP)--Ratmate, Megha, Kalimati and Hattiaahal--is inhabited mostly by Brahmins, Chhetris and Newars; in the upper part--Lasune and Bokre--the majority are Limbus. The pradhan pancha and up-sabhapti (vice-chairman) of Solma are Limbus.

The Brahmins, by virtue of being the top of the ethnic hierarchy, try to dominate all other ethnic groups but without success because of their increasing impoverishment and lack of unanimity. Since well educated and relatively wealthier Brahmins have already migrated to the Tarai, those that remain no longer perform the job of village money-lenders which gave them controlling social power in the village. Similarly, the Chhetris had had the responsibility of collecting land taxes, but that responsibility now lies with government officials so the Chhetris' social power is declining.

The Newars are emerging as a new social power due to the influence of a clever Newar who immigrated from a neighboring district 20 years ago. He holds an important position in district level politics and is currently Chairman of Ward No.8. Access to cash earning jobs is increasing and the ability of the skillful Newars to work hard is making them a socially more powerful group.

Following the victory of a Tulsia as Mananiya (member of the Rastriya Panchayat), most of the important positions in the district and village panchayats were won by his supporters whom most of the people of Ratmate, Megha and Kalimati voted against. Both the Pradhan Pancha of Solma and the vice-chairman of Terhathum district are Tulsis. Therefore, the people of the project area are in a very weak position in both village and district politics.

The high castes were more reluctant to hire themselves out as agricultural labor than the other groups. On average, 32 percent of adults in the "other" group hired out their labor for agricultural purposes (Table 1). The percentage of adults available as non-agricultural labor was also higher among Newars and the others (20 and 19 percent respectively).

 Table 1. Family Size and Labor Availability

Ethnic	Households Interviewed	Family size	Adults (15+)	Hired-Out Agricultural Labor (%)	Hired-Out Non-agric Labor (%)
High caste	57	7.24	3.84	13	12
Newar	21	6.85	4.19	25	20
Other	36	6.91	4.27	32	19
Total	114*	7.07	4.07	21	16

* This does not equal total households cultivating land in the command because some households could not be contacted.

Source: Field Study

 Land Use

There are about 3040 ropani (152 ha) of cultivated land in the canal command of which 50 percent is khet (irrigated lowland). Area B has 76 percent of the total cultivated land and 68 percent of the total khet land available (Table 2).

Table 2. Command Area Land Use by Location

Land Type	Percent Khet	Area (ropani)	Percent Bari	Area (ropani)	Total Area (ropani)	No. of Households
Area A	79	(578)	21	(158)	(736)	50
Area B	54	(1251)	46	(1053)	(2304)	98
Total	60	(1829)	40	(1211)	(3040)	148

Source: Field Study

In Area A, not much potential exists for either changing crop patterns or converting existing bari into khet because of the limited land area and topography. Also, as reported by the farmers, the khet land of Ratmate is not good for crops like wheat and potatoes.

The amount of bari land (rainfed upland) is significantly higher in Area B. This reflects a high potential for improvements in the land use pattern, thereby increasing water requirements.

Cropping Pattern

There is little variation in cropping patterns between locations. On khet, the most common crops grown are paddy followed by maize; two crops of paddy or paddy/wheat are rare. On bari, the most common crop is maize followed by blackgram. Because of the large area of bari, sorghum, sweet potato and various types of beans are also grown, either as a main crop or a relay crop. A negligible proportion of bari land is used to grow green vegetables during the winter.

Of the 312 khet plots on which cropping pattern data was available for last year, 42 percent was under paddy/maize. Of 167 bari plots studied, 48 percent was under maize/blackgram (Table 3).

Table 3. Plots by Land Type and Location

Land Type	PO*	Khet			MO	MB	Bari				Beans	**
		PM	PW	**			MM	MP	MMI			
Area A	33%	42%	14%	(95)	21%	10%	-	10%	21%	-	(19)	
Area B	36%	41%	10%	(217)	10%	55%	18%	14%	10%	15%	(148)	
Total	36%	42%	11%	(312)	13%	48%	16%	13%	11%	13%	(167)	

* PO=Paddy only; MMI=Maize/Millet PW=Paddy/Wheat; MO=Maize only; MB=Maize/Blackgram; MM=Maize/Maize; MP=Maize/Potato; PM=Paddy/Maize

** Figures in parentheses are total number of plots

Source: Field Study

No second paddy crop is possible on khet because of the irregular water supply during winter, and wheat is not preferred by the farmers

mainly because it needs relatively large amounts of fertilizer and the market for it in the hills is small. Maize is the only common second crop grown in the command irrespective of location. In the case of bari, there is a tendency to prefer second crops which require less labor and fertilizer. Particularly in Area B, blackgram, beans and sorghum are grown as second crops without using fertilizers; also little weeding needs to be done.

Water Availability

Data was collected on water sufficiency for cultivated khet plots, but the farmers' interest in having the canal upgraded led to biased responses. During the monsoon insight was gained into real water requirements.

Of the total khet, less than ten percent receives sufficient water year round although more than half is irrigated. In total, 32 percent of khet land has sufficient water at least for a single crop; variation between locations was apparent (Table 4). Rainfed areas, though all are below the KHARDEP canal, get water from monsoon streams and therefore do not suffer from lack of water in a year of normal rainfall. During acute dry periods, the cultivators tend to come together and try to agree to repair the existing canal but equity becomes a troublesome issue.

 Table 4. Water Sufficiency by Location (Percent)

Sufficiency	Rainfed	Fully Sufficient	Partly Sufficient	Unknown
Area A	71	13	15	1
Area B	54	3	40	2
Total	60	7	32	2

Note: Figures are for a single crop.

Source: Field Study

Land Ownership/Rental

In terms of access to land by ethnic group, the high castes own over half of the cultivated land in the command, but in relative terms, Newars have the highest per capita holding (Table 5). On average, lower castes farmed the largest area of total as well as khet land although most of them did not own the land, but were tenants.

Of the total cultivated land, 78 percent was owner-occupied and of 22 percent tenanted, more than half the owners were non-resident. In almost all cases, the tenants were from inside the command area.

Only two registered tenants were found. In almost all cases, land was tenanted on a mutual understanding basis. To quote one tenant, "I have to rely on him all the time for cash and grain; if I make a claim for tenancy rights, how could I get credit during food deficit months?"

 Table 5. Land Ownership by Ethnic Group (Percent)

	High caste	Newar	Other	Area (ropani)
Households	53	20	27	(148)
Total Land Owned	52	28	20	(3040)
Khet Land Owned	49	22	28	(1822)

Source: Field Study

Food Sufficiency

The proportion of households that produced sufficient food to feed their families throughout the year ranged from 71 percent for the high castes to 19 percent for the other castes. This was both because of limited access to land, and the cultural tradition to use some of the grain to brew alcohol. The food deficit for Newars was serious more as a result of brewing alcohol than of limited access to land.

Table 6. Food Sufficiency by Ethnic Group

	High Caste	Newar	Other	Total
Average cultivated holding (ropani)	22.00	33.34	16.63	22.68
Average family size	7.24	6.85	6.91	7.07
% of sufficient Households	71%	52%	19%	52%

Source: Field study

PROJECT IMPLEMENTATION

Historical Background

The people of Megha, Kalimati and Ratmate realized in 1974 that a new canal was needed along the existing alignment. Because of a stonefall near the intake, the canal failed to provide adequate water which resulted in unequal water distribution. Friction arose between a Chhetri and a Limbu over the proposed location of a new canal when the village panchayat assembly applied to the district panchayat for a grant (Howarth, 1980: pp 3-7).

The present alignment of the canal was implemented by the district panchayat (DP) during 1975, with a grant of NRs.4500. Beneficiaries contributed cash and labor, and when extra work was required, people from neighboring villages helped to dig different sections of the canal.

It was apparent during field research that those people who contributed labor were not happy with what they were paid. However, no record is available of the amount of cash and labor contributed by the farmers during that period.

Though the DP recognized the project as completed, the water did not flow. It was then proposed that KHARDEP undertake rehabilitation

work during 1978/79 and KHARDEP provided a grant of NRs.495,961 (Foster, 1985). The fund was directly handled by the Pradhan Pancha of Solma village panchayat (a Chhetri). Initially, construction was carried out on a daily wage system which, due to lack of proper supervision, was difficult to continue. Later, a piece work contract system was adopted and seven people--of whom four were relatives of the Pradhan Pancha, but non-beneficiaries--were contracted to do the job. The value of the contracts ranged from NRs. 2500 to NRs.8000. According to the villagers, the grant was not utilized solely for canal upgrading and maintenance work and the quality of work was poor. There was no contribution from the beneficiaries during that time.

Since that second attempt, the canal has been operative though not reliable. Whenever water was urgently needed in Megha and Kalimati, the people of that area tried to come to an agreement on canal repair work, but continuous use of the canal and full beneficiary participation in repair work have never been achieved.

Again during 1983/84, KHARDEP gave NRs.215,568 for canal upgrading work designed by a VSO. A total of NRs.213,500 was spent, 20 percent of which was material costs (Foster, 1985). The fund was handled by a committee of three people which included the Vice Chairman of Terhathum District Panchayat as committee chairman, the Local Development Officer (LDO), and the District Technical Officer (DTO). Construction work was carried out through piece work contracts and daily wages.

In total, 17 people were selected for piece work contracts, of whom only seven were beneficiaries. Upgrading work was concentrated on the intake and the first kilometer of the seven km long canal. Though the quality of construction work was considered good, most of it was subsequently washed away by floods. In the view of the beneficiaries, most of the permanent structure built last year was unnecessary. They were not consulted in the design and there was no local contribution toward the upgrading work. Farmers, hoping KHARDEP would finance construction of a cement-lined canal, stopped doing simple repair work on the existing canal and the heavy monsoon of that year destroyed it.

Introducing KHARDEP

The Kosi Hill Area Rural Development Program (KHARDEP) is jointly financed by HMG/N and the British Overseas Development Administration (ODA). It covers four hill districts of east Nepal: Dhankuta, Bhojpur, Terhathum and Sankhuwasabha. The program started early in 1977. Project implementation began in 1979 and the second Phase ended in mid-July, 1985. No agreement has been signed to date to continue the project.

The program aims to increase agricultural production, to take advantage of the Dharan-Dhankuta road, built with British aid. The need to increase agricultural production, make farmers less reliant on the monsoon, and reduce the food deficit, made it necessary both to improve the condition of the existing irrigation system and to support the construction of new schemes.

According to KHARDEP, local demand for help with irrigation schemes was high. Nine schemes were begun during Phase 1 of the program; two were later cancelled as technically unfeasible. A further 19 were accep-

ted into the program in 1979/80, and by 1981 they were committed to 44 schemes, submitted to KHARDEP by village panchayats through their DP.

A New Approach

To avoid the shortcomings of the past, a farmer-centered approach was undertaken. A preliminary visit to Solma was made by the author early in November, 1984. Several meetings were held with the beneficiary farmers on the issue of project implementation and local contribution. Except for a few farmers at the head end, all wanted to cooperate fully, but they pointed out that the project should be implemented directly after the harvest of the main crop around Dec/Jan, and beneficiaries should be on the construction committee to insure that the funds made available for the project were not pocketed (Pant, 1984: Interim Report). The farmers were asked to locate the sections of the canal where work was needed. On that basis, designs and estimates were made and the farmers agreed to rehabilitate the rest of the canal themselves.

The Construction Committee

During the first visit, the formation of the construction committee was planned for January and work was to start by mid-February, 1985. However, because of the lack of specific guidelines and forthcoming funds from KHARDEP, the district level officials concerned showed little interest in forming the committee.

In mid-March the news of the release of the budget by the ODA arrived and the necessary actions were taken to form the committee and to begin voluntary work as soon as possible. However, at this time, KHARDEP officials (especially the coordinator) showed little interest in the idea of voluntary work and proposed action research (Pant, 1985: Midterm Report).

The release of the budget encouraged the district level politicians and the Vice Chairman of Terhathum DP to form a construction committee. They refused the author's appeal to have at least one representative farmer on the committee and decided that access to paid work should be open to all and not only to beneficiaries.

Voluntary Work

Promoting wider participation of beneficiaries has long been advocated. Past methods, where irrigation was considered solely in technical terms, have come under popular criticism. Studies of existing irrigation schemes operated and maintained solely by the farmers have proved that:

"Farmers are capable of mobilizing significant amounts of resources for construction and maintenance of irrigation systems and of developing sophisticated organizations to effectively manage the water resources (Martin and Yoder, 1983: pp. 28-29).

In Solma, the construction committee decided the basis for voluntary labor would be area of cultivated land. Initially, it was estimated that 700 man-days would be enough to rehabilitate the earthwork section of the canal; since the preliminary estimate of land area was 3000

ropanis, each farmer was to contribute one day's labor per four ropani of cultivated land. Those with land at the head end of the canal had to contribute one day per five ropanis.

The author, stationed in Solma for four months, educated the beneficiaries regarding the need for voluntary labor contributions, encouraging them to participate and supervising their work. A daily attendance register was kept. The tools that were purchased by KHARDEP the year before were collected. One beneficiary blacksmith agreed to repair tools in exchange for his voluntary labor contribution. Every possible attempt was made to encourage participation in the canal work.

Progress

At the first construction committee meeting it was decided that voluntary labor would begin by April, but at the request of the KHARDEP assistant engineer, it was postponed a few days to allow him to complete detailed survey work. He stressed the need to maintain the grade of the canal and agreed to send one overseer for the period of voluntary work.

The work actually started on April 6, although neither the KHARDEP technical staff nor the tools were available then. It continued for about three weeks until 566 days of labor had been contributed by the beneficiaries. When the rain came, the farmers left to cultivate bari land and work on the canal was suspended for a week. After that, participation was minimal. Those who had contributed their share now waited for the others to make their contribution.

After the farmers' visit to Arghauli and Chherlung villages of Palpa district in west Nepal, the rate of participation rose. By the end of the voluntary work period (15 July), 823 days of free labor had been put into rehabilitating the canal, which was unprecedented in Solma. However, 35 days of free labor were due from 14 beneficiary households, while several others had worked overtime. The Newars owed the most days but 36 percent were from the high caste group (Table 7).

Table 7. Beneficiary Households that Owed Voluntary Labor Days

	High Caste	Newar	Other	Total
Number of Households	6	5	3	14
Due days of Labor	10	18	7	35

Source: Field Study

The households that owed days of voluntary labor were mostly village elites, panchayat members, teachers and a few poorer households. The Water Users' Association and other beneficiary farmers applied pressure on these households by threatening to revoke their water use rights. On the other hand, they decided to exempt widows and households without a male member.

Those who avoided doing voluntary work tried to disturb the others. On one occasion they encouraged households to send only women and boys which discouraged the men who were participating actively. Eventually,

representation of women and children was restricted. It was difficult for the village elite to accept that they were supposed to contribute free labor in proportion to the cultivated land that they owned. Some of them, particularly the Brahmins, have traditionally been dependent on others for labor and find it extremely difficult to do laborious jobs.

Besides the social problems encountered, a shortage of tools and technical support slowed down the work and a heavy burden was put on those farmers who had the skills and tools required.

Selection of Contractors

The cost of upgrading the canal was estimated to be NRs.227,173 of paid work. A sub-committee was formed by KHARDEP at the district level to supervise materials purchase, selection of contractors, construction and evaluation of work, and payment of contractors. However, technical supervision from the DTO was very occasional; the KHARDEP overseer provided most of the supervision throughout the paid work.

Selection of the contractors was made by the sub-committee, with two KHARDEP engineers present. Although qualified beneficiaries applied on the basis of work experience and participation in the voluntary work, the committee did not base its selection on these criteria. Though six out of the ten contractors selected were beneficiaries, all except three had non-beneficiary partners. The contract for purchasing and transporting the necessary materials was taken by the vice-chairman himself.

Contractor selection and distribution of work was politically biased; lucrative contract work was given to supporters of the vice-chairman, and the sons of the Pradhan Pancha and committee members were automatically involved as partners.

Progress of Paid Work

To utilize the funds available by the end of the financial year (July 14), it was necessary to speed up the pace of work, but progress up to mid-June was disappointing. The slow progress was primarily due to unnecessary arguments made by non-beneficiary contractors, mostly over rates for particular jobs.

Paid work continued to the end of the fiscal year. Partly because he had been badly insulted by the chairman of the construction committee in a dispute, and partly because of a decision to end KHARDEP's Technical Section by mid-July, KHARDEP's engineer left the site. Therefore, no one properly supervised the last week of paid work, and the contractors speeded up the work to meet the deadline. Poor quality work resulted, especially at the intake, and thus the water discharge is much lower than was hoped.

Materials

KHARDEP eventually produced a list of tools and other materials that were required. These amounted to 28 percent of the total cost of the canal work. They were purchased by the chairman of the construction committee, but data collected from the contractors suggest that only half the materials purchased were available for use. Tape, cotton,

mason's line, and steel bars never arrived on site; poor quality gabion wire was useless. The quantity of materials purchased was far lower than what was said to have been purchased.

Access to materials was easy only for those contractors who were supporters of the chairman, and delays in supply were often the result of low wages given to porters. Apparently, the figures given by some contractors for cement use were inflated at the request of the chairman.

PROBLEMS IN IMPLEMENTING FOREIGN AID PROJECTS

Background

Available data for foreign aid to the KHARDEP area over the four years 1980-84 shows that Terhathum district received the highest aid per capita (Table 8).

Table 8. Foreign Aid to the KHARDEP area, 1980-84 (excluding KHARDEP)

Districts	Population (1981)	Foreign Aid (NRs.)	Per Capita (NRs.)
Dhankuta	129,781	5,779,330	45
Terhathum	92,453	6,027,956	65
Sankhuwasabha	129,414	7,451,000	58
Bhojpur	192,689	3,403,522*	18

* The figure for Bhojpur is mentioned in the source to be of doubtful reliability.

Sources: CBS, 1982 (population); and Poudyal, 1984 (foreign aid).

The relatively higher proportion of foreign aid received by Terhathum has resulted in an increase in grants made to village panchayats, by the district. During 1980-84, Solma alone received over NRs.210,035, 36 percent of which was spent on maintaining existing irrigation systems. Otherwise, aid money went mainly into building schools and into drinking water schemes. In addition, a KHARDEP grant of NRs.263,000 was made available to Solma village panchayat so that it could upgrade the existing irrigation system. Despite all this, public works are in a distressing state. It seems that the district panchayat prefers to provide money to repair irrigation canals because it is an easy way to misappropriate funds (IDS, 1981).

Planning - In Whose Interests?

Conlin reports "... while village leaders mentioned irrigation as the major development priority, ordinary farmers favored livestock" (1981). In the existing panchayat system, it is the job of the Pradhan Pancha to prepare a list of projects and request the district panchayat to help. Since panchayat members are usually elite members of the community, and the Pradhan Pancha does not necessarily represent a village panchayat both in geographical and political terms, decisions may be biased.

There seems to be some confusion in KHARDEP as to who benefits from their grants. Although one KHARDEP outline plan remarks that irrigation projects mostly benefit the rich, more and more money has been made available for irrigation. Similarly, while KHARDEP Technical Cooperation Advisors are of the opinion that management should be improved, they prefer to give the responsibility for project implementation to the district panchayat which neither has the ability nor the commitment to initiate farmer-centered implementation.

No sector in KHARDEP has attempted to promote wider participation of the farmers in the planning process; convenience of the target group has not been considered and no poverty-focussed programs have been established. KHARDEP's Impact Study has shown that the poor are getting poorer in the Kosi Hills yet KHARDEP has been described as a poverty-focussed rural development initiative (Elliot et al, 1982, p 54).

Project Implementation - Whose Responsibility?

Small scale, local development projects suffer from weak organization and leadership at the local level. In the traditional power structure, the elites had more control over the mobilization of locally available resources than the Pradhan Pancha of present days, even though the Pradhan Panchas mostly belong to the land-owning elite. Traditional village society, which was already divided into social and economic groups according to caste and land ownership, has now further splintered into political sub-groups, all under the partyless panchayat democracy.

In Solma, the rehabilitation scheme serves most of the high caste people. The pradhan pancha and the district panchayat vice-chairman (both Limbu) do not own land in the command area. Unfortunately for the people of the command area, they lost control at all levels of the panchayat at the last election. Though they were fortunate to receive the KHARDEP grants, the impact was not great because the intentions of those who were given the responsibility for implementing the project have not been entirely good. Despite the high per capita aid figure, there has been little improvement in the quality of the lives of the villagers. Observations of corrupt practices, self-interest, and irresponsibility, have left them with no faith in their elected leaders.

At the district level, there are numerous organizations that implement local level development projects. They could successfully implement them if the labor and other logistical support was improved, yet at this level, development is thought of only in terms of money. Also, because they represent various political sub-groups at the district level, they exhibit political bias over the selection of the project itself.

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KHARDEP followed the district panchayat's proposal, prepared and designed the project, and in most cases, left it to the district panchayat to implement them. In several cases, failure was attributed to

insufficient technical supervision. Purchase and transport of materials, setting up of the construction committee, and record keeping were not clearly understood by the district panchayats; they had to wait for guidance from KHARDEP. This gave people at the district level the feeling that it was not their own project, but given by KHARDEP.

It was first decided that KHARDEP would implement the project directly. They assigned the task of forming a construction committee and supervising contract work to a local overseer. After just two weeks, the district panchayat was asked to take over these responsibilities, including the purchase of tools, selection of contractors and work supervision. Despite this dependency relationship between KHARDEP and the district panchayat, once KHARDEP had handed over the responsibility of project implementation, they preferred to remain passive.

The line of command between the expatriate advisers and their Nepali counterparts was unclear. Though the advisers were supposed to assist in technical matters, in practice they tried to influence policy-making decisions. In the case of this "action-study" which was supported by the expatriates, the coordinator's office later denied giving any support to the author who was in Solma trying to integrate the KHARDEP grant with local labor contribution.

General Attitude Toward Foreign Aid

Dependency on foreign aid has increased because local peoples' participation in development schemes has not been sufficient up until now. Politicians that can ensure that their district receives foreign aid become popular with the local people, but they have neither the commitment nor the ability to mobilize participation.

In Solma, the people were not content with how foreign aid was used. During preliminary discussions, farmers suggested that the project be implemented directly by KHARDEP and when the money was given to the district panchayat they were less optimistic about the project's success.

The villagers repeatedly inquired about the date that paid work would begin and they were curious to know why free labor was required in a government-implemented scheme. As no one explained the situation to them, nor gave them confidence that the money would be properly handled, the villagers were reluctant to participate fully.

ORGANIZATION AND WATER MANAGEMENT

Existing Systems in the Command Area

The farmers in Solma share responsibility for irrigating their fields. A number of canals are operated and maintained by them but, despite grants from the district panchayat to help them, many are in a poor condition.

When the first irrigation canals were built, an equitable system of distribution was introduced that is still used. Water was divided on the basis of seed area and was supplied to each plot for 24 hours every 15 days. This has been reduced to 24 hours every 24 days because the area

of cultivated khet has increased. Systems of payment are now disorganized; often a farmer does not know who the committee chairman is or how much to pay for water received. However, they do come to repair the canal before the start of cultivation (mid-June) in response to the sound of a drum. There are no written rules, but water distribution has remained equitable and there have been no recent disputes.

There are three main canals in the command area: megha ko kulo, which has existed for perhaps a hundred years and serves mainly Area A; tari ko kulo, which serves the area below the KHARDEP canal, but has been rendered useless by landslides near the intake; and sarkari kulo, built around 1961, which through Ratmate, crosses the magha ko kulo, and goes on to Kalimati thereby supplying a large area.

A large amount of free labor went into building the sarkari kulo canal and it worked smoothly for several years. Later, when the head of the canal was damaged by a rockfall, the water supply dwindled and the Ratmate people claimed that they were the initiators and should get supplied first, especially since the people of Megha and Kalimati could get water from the magha ko kulo canal. However, this was not tolerated by the people of Magha and Kalimati, who were the real workers in maintaining both canals. To show their disapproval, they slowed down repair work and now the canals are in a poor state.

Thus, instead of realizing the potential of the Pinguwa river to irrigate their fields, the system in the command area has been allowed to fall into disrepair and is therefore functioning badly.

Farmers' Visit to West Nepal

The visit to selected areas in west Nepal was arranged so that the farmers of Solma would have the chance to see some of the best managed and most efficient community systems. Five beneficiary farmers were chosen on the basis of their participation in the canal work, their ability to understand the techniques and to lead and teach a group of people. They spent one and a half days walking along canals in Arghauli and Chherlung villages in Palpa District, observing how the systems there were main-tained, talking to the farmers and learning from them. Farmers of both places were cooperative and proud of their canals.

As a result of the visit, the farmers of Solma were committed to working harder to improve their system and were convinced of what a community could do if organized properly. It was not possible to copy the systems they had seen immediately but improvements could be made.

Water Users' Association

After the visit to west Nepal, moves were made to form a Water Users' Association (WUA). A committee for the operation and maintenance of the KHARDEP canal had existed but because the canal did not function, the committee had little to do. Also, the chairman of the committee, although able and skilled in canal work, did not have enough time to provide the leadership required because of commercial commitments. Therefore, it was decided to form the WUA.

The WUA was formed in the presence of most of the beneficiaries;

eleven members were chosen that included four out of the five farmers who had visited west Nepal. The members represented various locations in the command, on a proportional basis (four from Megha, four from Kalimati, and three from Ratmate). Their first meeting took place on the same afternoon. At the meeting, a code of conduct was established and decisions were taken for the maintenance of the canal and a more equitable distribution of water. Most notably, a chaukidar was employed with a wage of 20 muri (about 60 kgs) of grain per year. His job was clearly defined: to patrol three and a half kilometers of the canal a day, to carry out minor repairs where necessary, and to inform farmers of major repair work that required the labor of more than one person.

Other decisions taken by the WUA dealt with responsibility for tools, reformation of the committee every year, regular meetings of the WUA every month, punishments for stealing water and violating rules, and fixing yearly payment by beneficiaries on the basis of land area cultivated. The WUA was helped by the author to keep an up-to-date register of landowners and calculation of required payments of grain.

Although almost all members of the WUA are committed and have the necessary skills to maintain the canals, none of them are village elites who therefore refuse to acknowledge their leadership. A difficult and paradoxical situation prevails: if the association includes village elites they would not be prepared to actively contribute to canal management and would therefore be useless, but if they are not involved, they threaten the association's existence. For example, the WUA, whose role is limited to requests, had difficulty collecting fines from people who violated the rules or who did not contribute the required number of days of voluntary labor. Once the WUA was seen to be ineffective in this way, the point of its existence was questioned.

Despite the discouraging situation, the WUA's success in mobilizing more than 300 man-days of labor for repairs to the canal during the monsoon can be regarded as a great achievement. The most important achievement is a change in attitude; households who were never willing to participate now join in to help with repair work, and most farmers are confident that they will get the water they require. However, it is difficult to say how long this will last in an environment of political hostility and threats from the elite in the area.

Introduction of a System of Water Distribution

In consultation with the farmers, a new system of water distribution was introduced. It was designed on an area basis; rotation was such that each plot would get water once a week. During paddy transplanting, water was shared on the basis of understanding and because the canal worked well there were no problems. The command was divided into four geographical blocks and each received water according to the proportion of land under cultivation.

Initially the new system did not go as planned because the canal head was unstable. Those who received water immediately after the repair work, benefitted, and those further down the line suffered because the canal head would deteriorate. Often those who did not contribute to repair work would still receive water and vice versa. After a week, the system was reviewed and the period of rotation was increased to 10 days.

Difficulties still exist in the form of demands from the district panchayat that the farmers hand over certain tools. It seems to be unconcerned about the canal's condition and whether or not it works.

Further Work Necessary

Considering resource availability and the efforts to motivate farmers to participate, progress of the project was encouraging. Much can be achieved if someone is committed, even within the existing socio-political framework.

It was suggested that cropping trials be conducted in cooperation with PAC, and that further financial and technical help be provided through FIWUD under KHARDEP Phase 3. However, no agreement has been made between Nepal and the UK for the expansion of KHARDEP, and there is no one to help the people of Solma with their technical problems.

It is possible that the canal could be used in the dry season if there was enough water at the source. If new crops were grown intensively during the winter, the best use would be made of the canal. The farmers need assistance in the form of materials and ideas.

SUMMARY AND RECOMMENDATIONS

Solma village has an area of more than 150 ha of cultivated land, of which 40 percent is bari. A steady breakdown in the system of irrigation management has led to reduced crop yields; the lives of the farmers are harder, and food deficits more frequent. As a result seasonal and permanent migration are increasing.

The average family size in the project area is seven people, with an average land holding of more than a hectare per family. The majority of farmers also have land outside the command area. Land owned by non-residents and cultivated by tenants accounts for 16 percent of the land area in the command. The remaining 78 percent is owner-occupied. All the land owned by non-residents has been tenanted out to local people and many resident owners rent out land. However, the people are reluctant to farm bari, which puts them in a better bargaining position. There are no landless families.

Despite several constraints, voluntary labor was mobilized to rehabilitate and maintain the canal. Many participated willingly although the local elite were not happy with the idea of free labor.

Progress with paid work was better than in previous years mainly because of the quality of supervision. Hindrances included delays in the budget release, procurement and delivery of tools and materials, and proper use of the grant money by those in control.

The increasing flow of foreign aid money has caused a dependency syndrome to develop, especially among the local politicians who see it has a tool that they can use during elections. Misappropriation and improper use of funds has made the farmers skeptical of government aid projects and reluctant to participate in them.

Problems of maintenance and equitable water distribution were severe particularly with the systems built using government grants. This was mainly because of unclear definitions of ownership and responsibility. In theory, village panchayats are the real owners of all government property in their panchayats, but they are slow to take responsibility for it.

On the basis of the author's practical experiences in the field, the following recommendations were formed:

- Despite the fragile ecology of the hills there is potential for developing irrigation. It has not been possible to harness that potential because of a lack of resources and commitment. A single, well-equipped agency should take responsibility for developing hill irrigation.

- Most irrigation schemes are small and not cost-effective. The government should limit its role to providing a helping hand where necessary and the farmers then need to be involved in the initial stages of setting up the scheme. In such a case, technical support in the form of advice and materials would be sufficient, without financial support.

- It is important to encourage beneficiaries to participate in the construction and maintenance of new canals to ensure efficient repair work and equitable distribution of water. Farmers are usually willing to make an active contribution if there is a good working environment. The problem lies in finding an accepted and committed leader to organize and control resources and to make the best use of government grants. A non-political person or body should be entrusted with the responsibility of mobilizing local resources.

- Problems of equitable water distribution and maintenance of government-funded canals can be resolved by setting up a democratic WUA with sufficient legal power to deal with conflicts and farmers who do not do a fair share of the repair work. The WUA should be an autonomous body but should have local panchayat members on the committee.

Despite an increase in the flow of foreign aid there has been little achieved either in terms of irrigation development or people motivation. The provision of funds is not sufficient for "development". The people must be taught the necessary techniques and must be encouraged to decide what their priorities are. Then they will participate fully to implement their own ideas.

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