



Promoting Small-Scale Irrigation Scheme: A Sustainable Way Out to Food Insecurity and Poverty Reduction in Rural Nepal

In a country like Nepal where the monsoon is becoming increasingly erratic, the food need of the ever-growing human population cannot be adequately supported by the rain-fed agriculture alone. Certainly, irrigation is the utmost and crucial means of ensuring sustainable agriculture and coping with periods of inadequate rainfall and drought.



Community managed irrigation system (Bayarban VDC, Morang district)

The context

The problem of food security in Nepal has been seriously felt especially in the recent years. World Food Programme (2008) stated that some 2.5 million people in the rural Nepal are in immediate need of food assistance. Additionally, 3.9 million people in the rural Nepal are at the risk of becoming insecure due to food prices jumping for last few months. The soaring food prices and inadequate supplies have directly affected 6.4 million people across the country.

In a country like Nepal where the monsoon is becoming increasingly erratic, the food need of the ever-growing human population cannot be adequately supported by the rain-fed agriculture alone. Certainly, irrigation is the utmost and crucial means of ensuring sustainable agriculture and coping with periods of inadequate rainfall and drought. Thus, where

rainfall is insufficient or unreliable, the rain-fed agriculture cannot fully support food production.

The information on the extent to which the hitherto developed small-scale irrigation schemes have been effective in attaining food self-sufficiency and eradicating poverty in Nepal is scanty. Studies conducted elsewhere revealed that farmers' access to reliable irrigation water can enable them to adopt improved farming technologies and intensify cultivation leading to increased productivity, overall higher production, and greater economic returns from farming. The findings of this study while corroborate some of these claims, it also revealed that the small-scale irrigation significantly contributed to food security through boosting agricultural production and livelihoods of the peasant community in the project area.

Discussion on development of small scale irrigation scheme as an effective tool for improving food security situation to fight hunger and poverty is the focus of this paper. Within this broad conception, this paper aims to explain the impact of small-scale irrigation on household food security and livelihoods. Based on the information generated from a case study of an NGO supported irrigation scheme in rural village of Morang district of Nepal, this paper argues that investment in improvement of small-scale irrigation scheme can be considered as a sustainable solution to the food crisis and poverty reduction among the peasants of Nepal.

Water is an indispensable resource for agriculture in the community. With the continued decrease in the availability of water over time, the farmers increasingly started experiencing an awful threat not only to sustaining their farming but also to their life and livelihoods. With the realisation of this agony, the poor farmers started looking up for possible assistance from various potential agencies.

RRN provided technical and financial support for rehabilitation a community managed irrigation scheme named *‘Machchhindra Dahi Jhinge Paini’* in a community called ‘Bayarban’ in Morang district of eastern Nepal, under the DFID-Nepal sponsored Community Support Programme. Prior to the implementation of the project, despite the availability of water source to their proximity, the farmers in the study area had not been able to make this source accessible to their farm lands for the past several decades due to the lack of necessary resources to rehabilitate the system.

As elsewhere, water is an indispensable resource for agriculture in the community being studied. With the continued decrease in the availability of water over time, the farmers increasingly started experiencing an awful threat not only to sustaining their farming but also to their life and livelihoods. With the realisation of this agony, the poor farmers started looking up for possible assistance from various potential agencies. But to their unfortunate, they received nothing more than hopeless responses. In the course of their efforts, the farmers, who were disappointed with the distressed response received from the agencies specifically concerned with irrigation development schemes in the country, came to know about the possibilities of obtaining assistance needed for development of small irrigation schemes from a DFID-Nepal supported Community Support Programme.

With this piece of information in hand, a group of them went to approach RRN’s Regional Office located at Biratnagar in Morang district. Having officially agreed upon the farmers’ proposal and with the completion of necessary feasibility study as well as other institutional formalities, the project came into being in the year 2005 in a phase-wise manner. RRN particularly provided financial and technical assistance for the rehabilitation of the scheme with the construction of the headwork and a number of aqueducts as major activities.



Participatory monitoring of the canal operation

The Effects of the Project

Prior to development of the irrigation scheme, the canal was neither physically nor economically efficient, as there were many water-leaking points along the canal. Consequently, the farmers at the tail-end of the canal used to be the hardest hit. The farmers had to be frequently engaged in the repair and maintenance work of the headwork and entire length of the canal. The condition of canal used to be even worse during the monsoon due to the flooding. Similarly, due to lack of adequate supply of water, the farmers were forced to abandoning cultivation of major crops other than rice. The vast majority of the farmers could grow rice as only one staple crop during the monsoon season. Some farmers used to plant finger millet and maize under the rain-fed condition, thus at a very high level of risk of reaping.

With the completion of rehabilitation of the scheme, it has produced many direct and indirect impacts on the livelihoods of the farmers. Intensification and diversification of crops are the immediate direct and positive effects. Presently, with the adequate and reliable source of water, the farmers have been growing several kinds of crops. The traditional cropping pattern has been replaced with the cultivation of various kinds of seasonal vegetable/pulse crops. Some farmers grow even the fourth crop, e.g., oilseed (mustard) thus achieving 400 % cropping intensity. During the interaction with a group, the farmers reported that the rice yield jumped from just 15-20 kg. per Kaththa to 80-100 kg. per Kaththa (30 Kaththa = 1 ha.). For the communities, one of the most exciting facts has been the opportunity to have their main meal with plenty of rice, which used to be difficult in the past. Hence they articulated in their native



language: *“Pet Bhari Chaamalko Bhaat Khaana Paaiyaa Chha, Jun Pahilaa Paaundainathyo’.*

The households, most of which were subsistence or semi-subsistence producers have now achieved some surplus production thus ensuring household food security to a substantial extent. For some farmers, the income received from the sale of surplus produce contributed to improvement in their household economy. The rise in the surplus yield and income eventually led to enhancement of social and economic status of the communities. The increased economic gains from the irrigated agriculture have provided the households with opportunities to spend on their children’s better education and health, quality diet, housing improvement, purchase of modern household amenities and clothing, use of modern means of communication (radio, TV, etc.) and transportation (bikes), celebrating festivals in a more elaborative way, etc.

As perceived and experienced by the farmers, the ramification of assured irrigation is that they are now able to embark on various livelihood activities that have exchange value such as commercial vegetable production, expansion of livestock from home-based to market-based, and dairy units (because of the increased availability of farm by-product as animal feed). With the experience of utilisation of water for multi-activities, they have come to articulate as: *‘Jal Bhaye Pachhi Je Pani Hundo Rahechha’*, which literally means ‘when the water is available, everything is virtually possible’. By and larger, as it appeared, the benefits of the irrigation scheme have been experienced by all the farming populations irrespective of their gender and caste/ethnic differences as well as location of their farms along the canal.

The changes brought by the irrigation development have also in turn created employment opportunities for the landless and agricultural labourers to a substantial extent. Consequently, many people, who earlier on used to go elsewhere out of village in quest of job opportunities, have now been able to engage themselves in the farming activities as wage-earners in their own locality.

In the social sphere, the irrigation development appeared to have contributed towards the cohesiveness for any kind of community action. The social network even among households belonging to different ethnicity/caste groups is said to be improving over time. The community members did not lag behind in saying ‘the social harmony and the social capital that exists now in the village are also due to the irrigation development. After all we have continuously put our enormous efforts together for months in order to get this scheme accomplished’.

Sustainability of the Scheme

Mere completion of the scheme is almost nothing without its long-term sustainability. The availability of and access to food has a direct bearing on improvement and expansion of the agricultural production, for which irrigation is one of the crucial inputs. Therefore, constant availability of adequate water to communities does mean much more than just meeting the irrigation need. Presently, the scheme is found to be operated and managed on a sustainable basis. The key factors that can be attributed to the sustainability of the irrigation system are as follows.

Institutional arrangements: The existing institutional arrangements, albeit in an informal manner, have been made with the consensus for operation and maintenance of the scheme. The water users committee operates the irrigation system in accordance with these institutional arrangements.

Users’ ownership: A strong sense of ownership feeling over the scheme on the part of the water users is also a contributing factor. Such a feeling has been further internalised in them as a consequence of their untiring labour contribution during the constriction phase of the scheme, and afterwards.

Continued participation: The fact that the physical structure of the scheme has been well maintained is due to the constant involvement of the water users in the operation and maintenance of the scheme, besides their other contribution incash, kind, etc., as and when necessary.

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Physically sustainable irrigation system is a necessary condition, but it alone is not sufficient. What is also required is a sustainable social system of water users that would function in line with the principles of good governance so as to operate and manage the physical infrastructure in a sustainable way.

Dynamic leadership: The dynamic leadership, which is characterised by altruistic, contributing, democratic, industriousness and convincing, is one of the most powerful factors not only in continuing the physical (canal) as well as social systems (water users' committee) at present, but also from the time when the need for irrigation development was realised in the community.

Scale of the scheme: The other factor in keeping the scheme sustainable is that it is of the scale that can be conveniently controlled and managed by the user-farmers themselves.

Equity in benefit sharing: Equitable allocation and distribution of the water to the farmlands within the command area is an important aspect that can be attributed to the present magnitude of sustainability. Because of such a practice, no any kind of complaints and disputes has been reported so far.

The Challenges Ahead

The success of agricultural development in the community can be attributed to the presently adequate and reliable source of water, more than anything else. All the multiplier positive outcomes resulted from various livelihoods as a result of the project implementation have led to a notable improvement in the food security, which in turn is expected to be a driving force in alleviating poverty. However, it must not be overlooked that the success would continue to persist only as long as the irrigation system continues to function effectively and efficiently. The challenge underlying, therefore, is how to make the irrigation system sustainable for assured irrigation. The following are some of the possible responses to this challenge.

(a) The augmentation of the current farming activities and expansion of the farm land is likely to result in demand for more water. Equitable on-farm distribution of irrigation water then

becomes crucial to undertake farming activities lucratively. Equity, often times, does not happen in practice as it ought to be. With the increased diversification and intensification of farming activities, the farmers may experience difficulties in terms of water supply and distribution in near future with the limited source of water. Therefore, a strong institutional mechanism for the water users group is required to make the water distribution equitable, and to avoid the likely disputes among the water users.

(b) Physically sustainable irrigation system is a necessary condition, but it alone is not sufficient. What is also required is a sustainable social system of water users that would function in line with the principles of good governance so as to operate and manage the physical infrastructure in a sustainable way. The existing water user committee in the community being studied is found to be very loosely formed, and hence obviously functioning more in an informal manner. This necessitates that the water users committee be strengthened institutionally, technically and financially so as to deal effectively and efficiently with the organizational, financial matters as well as the on-farm water management related activities.

(c) As irrigated agriculture has a potential to produce greater net returns for the farm households, the existing farming techniques practiced by the farmers need to be practically scaled up to realise the full potential of the irrigation scheme.

(d) Just as the community being studied, agriculture is the main source of livelihoods for many poor communities. Since agricultural development to the fullest extent is neither feasible nor possible without adequate and reliable source of water, irrigation development must be consolidated as part and parcel of the broader policy and programme of agriculture development.

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Rural Reconstruction Nepal (RRN), established in 1989, is a Nepali non-government, social development organisation involved in rural development, action-oriented research and policy advocacy focusing on peasants, poor women, dalits and indigenous nationalities, and other vulnerable communities through the process of facilitation, social mobilisation, empowerment and self-organisation. RRN's work is based on the four-fold approach to rural reconstruction covering: education to combat illiteracy and empower people to access their rights; sustainable livelihood to fight poverty; health to prevent disease, and self-government to overcome civic inertia.