Research article

Building Capacity for Sustainable Rural Development: Lessons from Nepal

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Abstract Rural development has been a buzzword in recent years among international development professionals. Numerous programs and policies have been implemented worldwide to bring about positive development in rural areas. Consistent with such efforts, we have introduced a series of projects to promote sustainable livelihoods in the village of Hamsapur, Nepal, such as developing a system to supply clean drinking water, a storage system for potatoes, and a computer lab to improve education quality. The purpose of this paper is to illustrate the need for building human capacity to sustain benefits from development projects. Qualitative data derived from observation and key informant interviews were used to assess impacts. Findings indicate that these projects did not meet our expectations of improving livelihoods in a sustainable way. Some changes resulting from the projects did not last long, and others could not be continued after external support was withdrawn. The main reason for lack of long-term sustainability was the lack of local capacity, specifically, a lack of knowledge and skills by locals that are critical to planning and implementing development projects and associated activities. The beneficiaries were unable to maintain the projects locally.

Keywords capacity building, rural development, Nepal

INTRODUCTION

Over four-fifths of the people of Nepal live in rural areas. Farming is their main occupation. They grow crops and tend livestock in a small land area. They understand the interdependence between nature and people. They practice subsistence agriculture that has sustained many generations. For generations, they followed a social system that governs their way of life. Rural development in this context could be synonymous with agricultural development.

International donor communities have widely recognized the need for rural development as a means to end hunger, poverty, inequality and unemployment in developing countries. National planners have adopted various plans and policies to promote rural development through a variety of programs, such as agricultural extension services for farmers, rural credit and cooperatives for farmers and entrepreneurs, construction of farm-to-market access roads, and irrigation schemes to increase crop yields. Development projects were implemented, but in many cases they were ineffective due to poor implementation and management (Government of Nepal, 2007). Of course, progress has been made to improve the livelihoods of many millions in rural areas. Policy reforms contributed to economic growth in the early 1990s. However, the initial momentum generated by the reforms began to wane by 1995 (Shakya, 2002). The rate of progress has not met the expectations of development professionals (Mishra, 2006; Panday, 1983). Moreover, some of the changes made by development projects were short-lived. Many project activities could not be continued by the local people after the donors pulled out. Local people did not have the financial and managerial capacity to maintain the development projects in their communities. To put it simply, although well intended, many development programs or projects have not been sustainable (Panday, 1983; Shakya, 2002; Nepal South Asia Center, 1998).

Sustainable development has been a buzzword in development literature. Global dialog on the concept and issues of sustainability began in the late 1970s (Orr, 2002). Scholars and practitioners continue to debate about what is to be sustained, and how we measure sustainability (Bell and Morse, 2000). Thompson (2007) argues that definition and conceptualization of sustainability have been philosophically open ended and continuously evolving tasks. Many tend to agree with the definition of sustainability advanced by the World Commission on Environment and Development in 1987: "meeting the needs of the present generation without compromising the ability of future generations to do the same." Similarly, there seems to be agreement on three primary dimensions of sustainability: social, economic and environmental. To some extent these dimensions overlap.

Michigan State University, in collaboration with a local school and a non-governmental organization, introduced a series of micro-projects to promote sustainable livelihoods in the village of Hamsapur, Nepal. These development programs included development of a system to supply clean drinking water, potato storage, and computer education at a public high school. This paper outlines the nature of these micro-projects, describes how they were implemented, and discusses the lessons learned for sustainable development.

METHODS

This paper is based on a case study approach. A household survey was used to establish socio-economic benchmarks of the community. A survey instrument developed by the United Nations Development Program of Nepal was adopted. Trained interviewers conducted surveys of 838 households. Data were coded and entered into SPSS software. Descriptive statistics, including percentages, range, mean and standard deviations were used to analyze the data.

Observations and informal interviews with key informants were used to describe project implementation and impacts. The researcher visited the study area every year, taking digital photos, interviewing beneficiaries, observing changes over time, and listening to key informants about issues and impacts. Notes were reviewed, organized by project, and analyzed to draw conclusions. Findings are presented as case studies.

RESULTS

Hamsapur is a typical hilly cluster of villages located in western Nepal near Pokhara. The population of the village is diverse, comprising Gurungs and Magars (major ethnic groups), Bishwokarma, Nepali/Magrati, Gharti/Bhujel, Bahuns and Chhetris. Education of the population is a critical factor for sustainable development. To respond to change, people must be able to read and write to understand messages for change. Table 1 show that in 2006, about one-fifth of the population of Hamsapur was illiterate. Although there seems to be an equal proportion of the population attending primary school and high school, higher caste people (e.g., Bahun, Newar and Chhetri) tend to pursue higher education more frequently than people from other castes or ethnic groups.

Table 1 Educational level of school age population by caste/ethnicity (N= 4,302)

Caste/Ethnicity	N	Illiterate (%)	Literate/ Primary (%)	High School (%)	Higher Education (%)	Currently Studying (%)
Bahun	2,194	17.1	27.7	28.1	21.2	5.9
Chhetri	114	16.7	43.9	25.4	10.5	3.5
Pariyar	64	17.2	29.7	18.8	4.7	29.7
Gharti/Bhujel	197	23.4	35.0	23.4	5.6	12.7
Gurung	566	15.0	38.5	31.6	7.4	7.4
Magar	137	24.8	34.3	32.1	7.3	1.5
Bishwokarma	656	33.8	43.6	8.7	2.6	11.3
Nepali/Magrati	135	31.1	33.3	16.3	4.4	14.8
Newar	241	20.3	25.3	26.1	17.4	10.8

Over 90 percent indicated that they are engaged in farming. Respondents were asked to indicate their total household incomes, derived from various sources. Crop yield and livestock production, salary and wages, including pension and remittances of all family members, were included in the household income computations. Table 2 shows the total household income for various caste and ethnic groups. It should be noted that some households did not report income.

Table 2 Household' annual income by caste/ethnic group (N=802)

Caste/Ethnic Group	N	Mean Household Income (Nepali Rupees)	SD
Bahun	415	131,309	219,932
Chhetri	23	113,842	114,172
Pariyar	10	142,280	153,169
Gharti/Bhujel	41	99,893	88,693
Gurung	102	177,993	336,149
Magar	18	199,642	266,290
Bishwokarma	123	69,684	97,300
Nepali/Magrati	28	98,136	61,444
Newar	42	90,876	48,928

Exchange rate as of January 25, 2010: USD 1 = Nepali Rupees 74.4

As shown in Table 2, Bishwokarma (traditional blacksmith caste) had the lowest household income. Magar households had the highest income, followed by Gurung. The Bahun and Chhetri households, although they belong to a high caste, had incomes lower than Magar, Gurung and Pariyar but higher than those of Bishwokarma, Nepali/Magrati, Newar and Gharti/Bhujel.

Micro-development Projects: We introduced a series of micro-development projects in Hamsapur. These projects included the construction of a drinking water system, bee keeping, raising of goats and pigs for income generation, promotion of coffee for cash income, potato storage, and development of a computer lab with Internet access to improve education. The following sections present three of these projects as case studies.

Case I - Drinking Water System: Drinking water is the major problem for Hamsapur residents during the dry season. The village is situated on the southern slope of an independent mountain and the mountain does not have a permanent spring to supply drinking water via gravity. Beginning in November, most water holes and springs at higher altitudes dry up as the monsoon ceases; the villagers are forced to go farther down the slopes to collect water from permanent springs/water holes. During December through May, women spend about three hours daily carrying pots of drinking water to meet family needs.

The shortage of drinking water has forced many households to migrate to the Terai region of Nepal or relocate their houses to the lower valleys. However, many villagers have neither the land in the valleys nor the resources to move their households. Needless to say, the poorest of the poor have no place to go for an improved quality of life.

In February 2000, the Mothers Group of Hamsapur approached the author of this paper to assist in finding appropriate help to address the drinking water situation in this village. During a village gathering, the local people agreed that a water user committee would be formed. The water user committee was tasked with setting policies for water distribution, mobilizing local people to volunteer for project implementation, and collecting monthly water user fees for managing the water supply.

The Rotary Club of Traverse City, Michigan sponsored this drinking water project. The Rotary Club of Pokhara, Nepal worked closely with the local Water User Group and an NGO, Indragufa Community Development Foundation, to implement the project. The author of this paper facilitated coordination of all partners for the project's implementation.

The major project activities included construction of a collection reservoir at Kurlungkhola; construction of a small pump house adjacent to the intake reservoir; and installation of a pump to lift water to the first reservoir (325 meters from the intake tank) and to the second reservoir (294

meters from the first reservoir). During the monsoon season, the electric pump may not need to be operational because water pipelines from a natural spring are connected to the second reservoir, using gravity to send the water to the reservoir. This system should provide a year-round water supply to almost 80 percent of water users in the village. To reach the remaining population, primarily in upper Syaklung, a third pump was installed at the second reservoir. Construction work started in May 2001 and was completed in February 2004. The supply of clean drinking water began in March 2004. A local person was trained to operate the system. Approximately 240 households benefited from the drinking water supply system.

One of the major problems for the system has been lack of a consistent supply of electrical power. Frequent lightning in the area and the fluctuation in electrical voltage blew the electrical fuse at the control panel. Every year, lightning damaged the motor or burned out the coiling inside the pump. The local people spent significant resources repairing the pump. Other problems included lack of timely payment or non-payment of water user fees by some households. In absence of an appropriate incentive for managing and maintaining the water system, the leadership of the local Water User Committee became dysfunctional. Despite the frequent interruptions in water supply and lack of leadership, the system was operational for five years. In 2009, the water pump at the base station was damaged badly and the water supply was not operational for the entire dry season. In January 2010, a new submersible pump replaced the old one, and the water supply has been restored. Challenges of maintenance, management and responsible fee payment are still to be addressed.

Case II - Potato Storage: Potato is a relatively new crop in the middle hills and valleys of Western Nepal. Farmers began planting potatoes in the 1970s. Many farmers of Hamsapur now grow potatoes. They harvest their potato crops in April and sell them at a low price, but they buy seed potatoes in October/November at very expensive prices. If farmers could store their potatoes for about six months, they could significantly increase their income from the sale of potatoes when demand is higher and supplies lower than at harvest time.

A group of farmers requested this researcher to demonstrate potato storage. The cost of constructing a community-based potato storage facility was funded by the Empower Nepal Foundation. Local farmers agreed to pay a small fee for the storage of their potatoes. It was proposed that the storage fee collected would be reinvested to build additional storage facilities for neighboring farmers during the second year and so on. Indragufa Community Development Foundation agreed to work with the local farmers' group to mobilize their resources and to build the demonstration potato storage facility.

The potato storage facility was constructed in 2001. The farmer who owned the storage facility indicated that he would begin storing the potato crop in 2002. He, however, was concerned if the right temperature and humidity could be maintained inside the storage facility. Once the storage facilty was complete, it stayed idle for a few years. No farmers used the potato storage facility. When asked why they did not use the storage facility, farmers said:

- "Needed cash, so I sold my potato crop immediately after the harvest. I did not need the storage."
- "I grow potato only for my family's use. I did not need the storage."
- "We don't know if the potato stays good for 5-6 months. What would happen if the crop got rotten? Who will pay for the loss?"

Case III - Computer Lab to Improve Education Quality: Ramkot Higher Secondary School is located about 35 kilometers southeast of Pokhara. It has over 400 students in grades 6 through 12. The school has 13 teachers and two support staff members. English, math, science, social studies, Nepali languages, and health studies are taught at the school. Twelve elementary schools and two middle schools in Hamsapur Village Development Committee feed students to Ramkot Higher Secondary School.

In March 2007, this researcher met with the Ramkot Higher Secondary School Management Committee to jointly develop a master plan for systemic educational quality improvement. The master plan included the use of technology in teaching and learning, construction of new classrooms and lab facilities, engagement of parents and volunteers in school improvement activities, and offering of technical training to enhance employment opportunities for graduates.

A computer lab having nine computers, access to wireless Internet, and a printer was established at Ramkot Higher Secondary School. The computer lab was intended primarily for use by the school teachers and students. Other professionals working in the area such as health technicians, agriculture extension workers, and Village Development Committee staff members could also access the computer lab on a "fee for use" basis.

The computer lab was originally set up in a small classroom at Ramkot Higher Secondary School. It was under direct supervision of the school administration. It was agreed that Ramkot Higher Secondary School would identify one or two teachers having basic knowledge of computer and/or showing strong interest in using computers. These teachers would be sent elsewhere for computer training. Upon their return, they would serve as instructors. They were expected to receive periodic upgrading courses as needed. The school would be expected to formulate policies and guidelines for the day-to-day operation of the computer lab. It was agreed that the computer lab would be open for students during school hours and open to community members and professionals during weekends and after-school hours. A small user-fee was proposed to sustain the operation of the computer lab.

It has been three years since the computer lab with Internet access became operational and the computers are kept covered to protect from dust. However, no teacher has been given full responsibility to manage the computer lab and/or offer classes to students and teachers. One teacher is assigned to look after all hardware and software on an ad-hoc basis. This teacher is asked to send e-mails for the school and uses word processing software to type examination questions and important school communications. The lab has never opened its door to students and not many teachers have made use of this facility. When asked why the lab is not made open to students and teachers, the head master and members of the School Management Committee said,

- "We had limited classroom space, so we had to move the computers to our office area. Now we have new classrooms and we hope to have one room dedicated to the computer lab. Soon, we will start offering computer training to students and interested teachers."
- "Computer is not required in the curriculum, so there is no position for a computer teacher. As a result, we are unable to offer computer classes."
- "The classes are scheduled from 10:00a.m. - 4:00p.m. There is not free time to schedule a computer class. It is possible that we could offer computer classes either before or after the regular school classes to interested students. We can offer computer classes if we have a hostel at our school."

It should be noted that a few teachers and the school librarian have shown interest in learning how to use the computer. During a recent visit to the school, many students approached this researcher indicating that they are truly interested in learning the use of computer for word processing and Internet access.

CONCLUSIONS

Hamsapur is a typical hill village of Nepal. Most households are subsistence farmers. Although school participation has improved in recent years, local people lack skills to manage technological aspects of rural development. For example, graduates from local high school have not skills in using electrical tools or plumbing equipments, and there is no easy access to receive training. Most development projects focus on technologies that require the use of electricity, operation of a machine or equipment. Thus, building local capacity is imperative.

We have found that human capacity is the fundamental factor in the sustaining benefits of rural development programs. Despite the fact that drinking water is a real need of the people of Hamsapur, local capacity to maintain the system was missing. The project did not include training of the local people as electricians and plumbers. They did not receive proper training on how to use the plumbing and electrical tools and equipments. Instead of building local capacity to prevent possible problems in the operation of the drinking water supply, the project depended on outside expertise for repairing the broken pumps. This increased the community's dependency on the outside world and reducing local capacity for development.

The case of potato storage suggests that we, as development professionals, tend to move quickly to address problems without fully studying the nature and scope of a problem. It seems that long-term storage was not a real need of most of the farmers, who grow potatoes mainly for home consumption. Further, farmers having low levels of education are unable to comprehend the need to maintain stable room temperature and humidity for potato storage. Their perceived and real risk of losing the crop was greater than the potential long-term financial benefit of the storage. It would have been appropriate to demonstrate potato storage for a couple of years at no cost so the local farmers could learn from the experience, and adopt the practice after a few years if perceived as valuable to them. Again, building local capacity through a demonstration project would help the transfer of technology.

Use of computers has changed the way we do business globally. All businesses and industries of the modern world use computers for their operation. Teaching computers at high school has proven to be necessary for graduates to find employment. Many educational resources are now made available online. However, in the context of rural Nepal, most public schools have no infrastructure or resources to offer computer education to students. School teachers who never used computers have little appreciation of computer education. The school curriculum does not require use of computers. Accordingly, the government does not support computer teacher positions in public schools. In such a context, how can public schools begin offering computer literacy to their students? Questions abound. Who is responsible to develop computer literacy among high school students? What should be the role of the government? What should be the role of local schools and parents? Do development planners and policy makers realize that that students' ability to use computer is a corner stone for building local capacity for rural development in the 21st century?

In our work in Nepal, we emphasized community needs assessment, allocation of resources to address needs identified by the community, and insurance of participation by local people in project implementation. Nevertheless, our projects did not achieve their potential, particularly over the long term. We learned that participation in project planning and implementation is a necessary but not sufficient condition for sustainable development. Developing local capacity to manage the change over the long term is imperative, and should be addressed specifically during project planning. We suggest that development projects should develop the skills of the local people through training so they could operate and maintain machinery and equipments. More importantly, keeping the capacity in the village, either by incentivizing trained people to stay or by developing a system for training others to replace them, is essential for sustainable rural development.

REFERENCES

Thompson, Paul B. (2007) Agricultural sustainability, What it is and what it is not. International Journal of Agricultural Sustainability, 5(1), 5-16.

Bell, S. and Morse, S. (2000) Sustainability indicators. Measuring the Immeasurable, Earthscan, UK.

Government of Nepal (2007) Three year interim plan: 2007/08-2009/10. National Planning Commission, Nepal.

Nepal South Asia Center (1998) Nepal human development report 1998. Nepal.

Mishra, C. (2006) Development and underdevelopment, A preliminary sociological perspective. Capitalism and Nepal, Mulyankan Publication House, Nepal. (in Nepali)

Orr, David W. (2002) Four challenges of sustainability. Conservation Biology, 16 (6), 1457–1460.

Panday, Devenrda R. (1983) Foreign aid in Nepal's development: an overview. Foreign Aid and Development in Nepal, Integrated Development Systems, Nepal.

Shakya, S. (2002) The squandering of a promising economy. State of Nepal, Himal Press, Nepal.

World Commission of Environment and Development (1987) Our common future. Oxford University Press, UK.