IDE Nepal: Developing Smallholder Ecosystem[1]

Sourav Mukherji and P D Jose

Evolution of IDE Nepal

International Development Enterprise (IDE) is a development organization that operates in eleven countries worldwide with the aim of creating income opportunities for poor rural households in developing countries. Established in 1981 by a group of North American social entrepreneurs, IDE provides the rural poor in Asian and African countries with low-cost access to water for agricultural use and links them to markets so that their agricultural products can be sold profitably. In its 28 years of operation, IDE has worked with 3.8 million households, increasing their aggregate income by over one billion dollars; thereby enabling 19 million poor people to improve their economic status significantly[2].

IDE Nepal is an affiliate of IDE, registered with the Social Welfare Council of Nepal Government. It was established in 1992 with the aim of developing low-cost irrigation technologies suitable for smallholders[3] in rural Nepal. More than 80% people in Nepal are engaged in agriculture and a significant number of them have smallholdings[4]. Typically smallholder farmers are economically impoverished and often belong to disadvantaged classes in the society. IDE intends to increase farm productivity of poor farmers by providing them with low -cost irrigation technologies, which in turn would increase their income. This would also have the secondary effect of empowering the marginalized group such as women and farmers from lower castes and bring them into the mainstream of economic activities.

In its initial days, IDE in Nepal experimented with rower pumps. Subsequently, IDE Nepal developed low -cost human operated treadle pumps suitable for irrigation in the Terai[5] region of Nepal. This was followed by the development of low-cost drip irrigation system in 1995. Subsequently, IDE developed micro-sprinkler systems which, along with drip systems were given to farmers in the middle mountains of Nepal. IDE also developed low-cost water-storage tanks, designed and promoted Multiple -Use Water Systems (MUS) so that water, a scarce resource in the hilly regions could be stored and used efficiently for both domestic and agricultural purposes. Very often, such MUS are used in conjunction with low-cost irrigation systems to cultivate high value crops such as off season vegetables in the hilly areas.

2003 was an inflection point in IDE Nepal's evolution when it realized that supply side interventions such as technology for irrigation and water storage needed to be coupled with demand side interventions so that farmers could be linked to markets. This would enable farmers to sell farm products profitably, resulting in increased income. Thus, IDE developed a comprehensive framework of developmental intervention at the input, process and output stages of the agricultural value-chain targeted towards improving lives and livelihood of smallholder farmers and disadvantaged groups. Today, IDE Nepal operates in 22 districts in Nepal (Refer to figure 1 that depicts the districts where IDE operates), having reached more than 1.4 million poor farmers in 240,000 households in rural Nepal. Their programmes have resulted in the sale of 200,000 treadle pumps and 40,000 drip irrigation systems in rural Nepal. It is estimated that IDE interventions have generated an additional income of US$150 per year for each of the 240,000 households whom they have reached.

1 This case was prepared by S Mukherji & P D Jose of the Indian Institute of Management Bangalore and is intended to be used for class discussion rather than to illustrate either effective or ineffective handling of the situation.

2 Source: www.ideorg.org/OurStory accessed on 17th October, 2009

3 While definitions vary, "smallholders" are defined as farmers who own less than half hectare of land

4 Source: An Overview of Micro Irrigation in Nepal, K K Bhattarai (2009), Department of Agriculture (Unpublished report). According to Agricultural Census 1991, 44.7% of Nepalese families involved in agriculture have smallholdings, which together comprises 11.3% of the total cultivable area in Nepal.

5 The country of Nepal can be roughly divided into three horizontal areas, namely the northern high mountains, the middle mountains or Siwalik and the southern plains, the Terai.

IDE's Mode of Operation

A large number of farmers in Nepal are smallholders while there are several others, mainly from the disadvantaged castes, who are landless. These farmers are usually engaged in growing limited amount of cereals using water that is available during the rainy season. Since their farm income is not enough for their livelihood they supplement their income by working as daily wage labourers or migrate to cities and even to the neighboring country, India in search of work[6]. IDE realized that small holdings of these poor farmers can be effectively utilized for growing vegetables, if the farmers were provided with suitable technology for irrigation and water management and knowledge inputs for managing the vegetable farming process. With proper linkages to markets, farmers would be able to sell these vegetables profitably, leading to substantial increase in income and thereby improvement in their quality of life.

IDE intended to leverage the comparative advantage of smallholders in order to engage them in profitable farming activities. Smallholders often have advantage in labour intensive farming activities because agricultural labour suffers from a 'moral hazard' problem in case of organized farming that employs wage labour. It is difficult to assess or monitor the quality of labour inputs because the output of such labour can only be measured on longer time horizons, usually when the crop or commodity is harvested or sold. A smallholding that is typically owned and managed by members of a family will not face such 'agency problems' and are thus better off in labour intensive production processes that require careful monitoring. IDE thus identified cultivation of vegetables as an activity that is ideally suited for smallholders because vegetable farming is labour intensive, has a relatively simple production process and does not require a high level of skills. Moreover, Nepal is deficient in vegetable production and a significant part of its vegetables are imported from India. Thus, if farmers in Nepal are able to grow vegetables, they will find a ready market close to their homes, thereby obviating the need for developing complex storage, distribution and logistics infrastructure for taking their products to distant markets.

IDE started off in Nepal by developing and refining micro-irrigation technologies (MITs) that are low-cost and appropriate for smallholders. Such technologies are rarely developed by organizations operating in the private sector because it is difficult for the private sector to enforce patents and thereby recover the investment that they make in research and development of technologies that are targeted at the smallholders who are poor and cannot pay high prices. IDE therefore invested in design and initial promotion of MITs. Once the design was stabilized and markets for such equipment were identified, it was possible for private entrepreneurs to start manufacturing and selling MITs as a sustainable commercial venture. The case of Thapa Mould and Die described in later section is one such example. Apart from MITs, IDE has also developed appropriate agricultural equipment for coffee processing, oil distillation from Non Traditional Forest Products and other high-value agricultural products.

IDE, in its early days received support from MISEREOR for development of MITs such as drip systems, micro sprinklers, treadle pumps and water storage and distribution systems. IDE bids for project grants from donor organizations, often in partnership with other development organizations, as and when it identifies an opportunity that can lead to improvement in the economic conditions of the rural poor. IDE has received significant financial support from USAID for their Smallholder Irrigation Market Initiative (SIMI) and Education for Income Generation (EIG) projects in partnership with Winrock International. Their Rural Prosperity Initiative (RPI) is supported by Bill and Melinda Gates Foundation. Other organizations and institutions from where they have received financial support include MISEREOR, DFID, the Manitoba State Government (Canada) and the Dutch Government while

6 According to World Food Programme's Comprehensive Food Security and Vulnerability Analysis (September 2005) migration is widespread in Nepal involving 25% of adult male population. Even during the harvesting period, 44% of the households have one or more members away to pursue labour opportunities. Migration is a common livelihood strategy for those living in poor Terai communities as well as in Far and Mid Western Hills and Mountains. The most popular destination for labour migration is India (40%) followed by Nepal (30%) and other countries (22%). While migration has economic benefits in terms of poverty reduction, it had significant negative consequences such as severe health risk, widespread violation of human and labour rights and disruption in family lives (Passage to India: WFP Publication, November 2008)

they have had partnerships with CEAPRED, SAPPROS, AEC and the government of Nepal in implementing their various projects. A partial list of recent IDE projects, the budget and the impact of such projects is provided in table 1.

Developing Agricultural Value-Chain Suitable for Smallholders

IDE figured out that in order to enable the smallholder and landless farmers become profitable vegetable growers, they needed support that went beyond micro-irrigation technologies or superior water management systems. The farmers needed to be linked with several other players such as suppliers of agricultural inputs (e.g., seeds), technologies (e.g. those needed for irrigation, water management) and distributors and sellers of agricultural output. Farmers also needed to be provided timely information about the demand supply conditions existing in the markets, which in turn can determine when and what kind of products they should be cultivating in their farms to maximize their returns on efforts and investment. With this in mind, IDE created an integrated framework named Poverty Reduction through Irrigation and Smallholder Markets (PRISM) and adopted it in Nepal to develop agriculture value-chain suited to the needs of smallholders with an overall objective of increasing farm income, thereby improving the economic conditions of the poor and marginal farmers.

As part of this programme, IDE aimed to create networks of small enterprises that would provide agricultural supplies needed by farmers and link farmers to markets so that they can get the best possible price for farm output. While IDE would continue to work with the farmers and provide them with knowledge inputs for farm management and productivity improvement, IDE's role was to become an enabler of a self-sustaining system that would continue on its own even after IDE completed its specific projects. Explains Luke Colavito, Country Director of IDE Nepal, "What is unique about the value-chain approach is its focus on all enterprises and stakeholders involved in production, processing and marketing of a commodity. It identifies points of market failures and constraints in availability of appropriate inputs, processing and access to markets and designs interventions to overcome these constraints. These interventions include building capacity of enterprises and service providers, establishing linkages between enterprises and institutions, developing and introducing appropriate technologies and working with the government for investing in public goods. Above all, we want to ensure that all services and input providers are profitable and sustainable by themselves - that is the only way in which we can create sustainable livelihood opportunities for smallholders and poor farmers".

Thus, IDE works with manufacturers of micro irrigation technologies, retailers and distributors of technology and other farm inputs as well as with masons who provide installation and maintenance services of basic farm infrastructure. IDE provides initial support in terms of technology design to entrepreneurs who manufacture farm equipment such as drip irrigation systems or treadle pumps so that these equipments are suited to the specific needs of the smallholders. IDE also provides continuous support in terms of quality control, design improvement and links these manufacturers with distributers and retailers. IDE keeps an informal control over the prices that these manufacturers and retailers charge the end customer which ensures that the products are affordable. At the same time, IDE also balances the profitability needs of the various actors in the supply chain so that the business remains attractive and sustainable for the entrepreneurs. IDE's various interventions with manufacturers are explained in a later section in a greater detais through the case of Thapa Molds and Dies.

IDE works closely with 'agrovets' - entrepreneurs who supply agricultural inputs such as seeds or saplings to the farmers. IDE trains the input suppliers so that along with sale of inputs they can offer information on planting methods and timing, pest management and production of different crop varieties[7]. Such technical knowledge needs to be offered as embedded services since the farmers have limited access to other means of getting information that is critical for managing the crop production process. Mr. Narayan Prasad Adhikary is the proprietor of Adhikary Agrovet in the town of Kohalpur, Nepalgunj. Twelve years ago he started his business with NR[8] 3200. Today his shop has an annual

turnover of NR 5-6 million from sale of seeds, saplings and embedded services to vegetable farmers who have benefitted from IDE's interventions. "When I started, I had very little knowledge of agriculture. IDE gave me training about various varieties of high quality seeds, planting and farming methods, as well as how to build a nursery that enables me to provide essential services to the farmers", says Narayan Prasad. "With IDE's help, I have also created a document that lays down best practices in vegetable cultivation. Till date I have sold about 1000 copies of the document", he proclaims proudly, indicating the high demand for knowledge inputs from the farmers.

IDE's on-farm or process interventions include providing information to the farmers about the right kind of crops and the timing of cultivation, enabling multilevel cropping and crop diversification to spread and reduce risks as well as providing knowledge inputs about the right technology for farming and irrigation. Over a period of time, the farmers start receiving such knowledge either from the input suppliers or from the traders with whom IDE links the farmers. IDE also provides training to some of the farmers so that they in turn can become trainers and disseminate the necessary knowledge within the farmer community. However, IDE field workers keep in constant touch with the farmers informally monitoring their progress as well as helping them in case of some unexpected problems. The field personnel also act as important linkages between project sites and IDE head office, both in terms of providing project information as well as seeking help if necessary.

In order to aggregate farm output, IDE organizes the smallholders into communities called Marketing and Planning Committees (MPCs). MPCs help farmers to coordinate their production process, participate in joint training, benefit from the knowledge being imparted to them by IDE and input suppliers as well as produce output suited to market specification. The downstream processes of transportation and investment in marketing infrastructure derive scale economies from such aggregation and enables communities to have better terms from transporters, traders, and retailers. Such aggregation also reduces the need for multiple brokers in the value-chain. Sooner or later, such communities mature into self-help groups empowering the rural poor to collectively bargain for their interests and rights. Today, IDE has started linking these communities with financial institutions and is in the process of enabling a credit model where the community can jointly provide guarantee to loans made to the individual member.

Social Mobilization

From 2003, social mobilization became a critical part of IDE's activities targeted towards developing the agricultural value-chain for the smallholders. The poor farmers, IDE's target group, are either owners of small lands or are landless, earning their livelihood through daily wage labour. Using micro-irrigation (drip and sprinkler irrigation) to cultivate vegetables is a new concept for the Nepalese farmers, who for centuries have been accustomed to cultivating rice through conventional methods of irrigation. However, IDE assessed that the poor and marginalized farmer, many of who have access to small landholdings , can earn significant returns by growing seasonal vegetables and micro irrigation techniques are most suitable for their small plots of land. There is a large demand for vegetables in Nepal, a significant part of which is met through imports from India. If the farmers are given proper inputs and information about market conditions, it will be possible for them not only to meet local demand, but also export their vegetables to India by taking advantage of seasonal shortfalls[9]. However, it is a challenging task to identify these marginalized farmers and convince them about the utility of growing a nontraditional product such as vegetables or fish using nontraditional techniques of irrigation.

Before IDE starts any intervention, it conducts a survey or a feasibility study to identify a suitable location and communities that can be engaged in those locations. The required data is sometimes obtained from district officials or other agencies like the United Nations that have experience of working in these areas through programmes such as the World Food Programme. After

7 IDE offers training to various players in different modules. An illustrative list and cost of such training in provided in Table 2. IDE does not charge the participants for such training. The training cost is recovered from project budgets. IDE trains approximately 10000-12000 persons every year.

8 NR stands for Nepalese Rupee, the national currency of the Republic of Nepal. 1 US$ ~ 75 NR

choosing community and deciding on a suitable intervention, be it vegetable farming or fishery in micro ponds, IDE identifies opinion makers and influencers of these communities and conducts a series of discussions with them, explaining to them the proposed intervention and the possible benefits that can accrue to the marginalized members of community as a result. Often such opinion makers are not poor farmers themselves. However, discussions with them enable IDE personnel to understand the social situation and the concerns of various stakeholders.

Once IDE is able to convince the opinion makers, it takes their help to identify the disadvantaged members - the poor, the landless and those belonging to backward caste. IDE members hold a series of discussions, explaining to them about the proposed programme, its benefits and the part that the members need to play to make it a success. It is from this point when IDE encourages the community to develop norms of governance among themselves that includes identifying sub groups, team leaders and laying down rules of engagement in collaborative efforts. The focus is on making these communities as much self-sufficient as possible with IDE taking the role of providing them necessary technical inputs as well as linking the community with input providers, traders and government institutions. IDE also identifies local resource person from the communities who are provided further training so that they in turn can train other members of the communities on a continuous basis. The communities and local resource persons are assisted by IDE field personnel who are competent to provide technical support to these communities. IDE field personnel also keep a watch on the development and progress of the community and are able to ask for assistance from IDE when the community needs such assistance. As a result IDE field personnel develop deep relationships with the communities, relate to their context, understand their specific problems and provide the essential continuity in IDE interventions even as IDE transits from one development programme such as SIMI to another such as EIG[10].

When farmers are formed into communities, it enables them to get credits from the suppliers because in the absence of any collateral from individual farmers, the suppliers are willing to trust the commitment of the collective towards repayment of loans. IDE has introduced the concept of revolving credit among different communities where community pressures ensure efficient utilization and faster repayment of loans.

Marketing and Planning Committee (MPC) at Gulariya

IDE realized that it was very important to establish collection centres for aggregating vegetable production so that smallholders can be linked to traders and regional markets. It therefore enabled farmer communities to setup Marketing and Planning Committees (MPCs). MPCs select traders who act as agents for the producers as well as provide supporting services to the farmers such as sale of agricultural inputs, credit, technical assistance, crop planning for marketing opportiunities and representing farmers to government and development institutions. Table 3 gives an indicative list of MPCs that were created as part of three IDE projects.

Ms. Prema Kumari is the local service provider at Gulariya MPC at Bardiya district. She also belongs to the executive body of the MPC that was established in January, 2005. IDE setup this MPC in order to create cooperation among the local farmers, provide them with training necessary for crop planning, growing and selling vegetables as well as linking the farmer to traders so that they can get the best price by selling their products at opportune moments to the best buyer. Prior to IDE intervention, most farmers in this area were involved in growing paddy that provided them with an annual income of not more than NR 3000. They needed to supplement this with daily wage labour, often migrating to distant places, even to India in search of employment. With training and inputs received from IDE (under the SIMI project), an average farmer in Gulariya started to produce 10 quintals of vegetables, such as chilies, lady's finger and pointed bottle gourd, per year and earned NR 45000. This improved their economic conditions

9 Because of differences in climatic conditions, seasonal vegetables in Nepal can become off-season vegetables for India.

10 Education for Income Generation. Refer to Table 1 for timelines and objectives of these various programmes.

substantially. "Now we can send our children to good schools, have highly nutritious food, and use cellular phones to communicate," says Prema Kkumari who recently purchased a motorcycle and is learning to drive the same. "The best impact of this additional income is peace at the household. When there is no money, there is tension every day. Now people can do what they want and we, the womenfolk, get a lot more say in household matters". While six years ago it was almost unthinkable for women to take a lead in community activities, today Gulariya MPC has almost equal representation of women in its apex decision making body. Mr. Dinanath who was actively involved in the governance of the MPC since its inception says, "Today we have 315 farmers as members of this cooperative, making it one of the largest in the district, with an average vegetable collection of 2 Metric Tonnes[11] per day. It is our aim to bring all farmers within our fold - this results in price stabilization in the market. Farmers have the assurance that there would be buyers for their produce and customers are assured of good product at a fair price. Most importantly, MPC has given a voice to the farmer. We have convinced the district agricultural office to invest NR 600,000 in basic infrastructure necessary for running this collection centre. We realize how much we can gain by working as a collective - there has been a social change of some sort".

Micro Fish Ponds

At Tepri, another small village under Gulariya municipality, IDE, as part of the Education for Income Generation (EIG) programme, created 105 fish ponds and helped the local villagers, most of who were landless, to have a viable source of livelihood. Based on advice from their fisheries expert, IDE provided technical support for constructing the pond while the United Nations World Food Programme provided food to the villagers (~ 100 MT of rice)[12] who were involved in the excavation and pond construction. Land for the site was leased from the local municipality @NR 700/pond / year that also provided shallow boring pumps necessary for the construction. The villagers spent NR 500 in purchasing the fingerlings (three or more varieties of carp) and some chemicals that are necessary for maintaining water quality. After 8-9 months, each of these ponds is expected to yield 25 kg of fish that can be sold at NR 150 per kg. IDE also tied up with fish traders who agreed to purchase the output. Prior to the creation of fish ponds, these villagers were primarily involved in daily wage labour. Since fish maintenance takes not more than two hours per day and little or no expenses, income from these ponds would double or triple the household income resulting in considerable improvement in their economic condition. IDE trained a few of these villagers with techniques of fish production, pond management, maintaining water quality and control of diseases. While there have been successful fish maintenance programmes elsewhere, most of these involved constructions of larger ponds. At Tepri and nearby locations, IDE created smaller ponds such that every household has a pond for itself and results so far indicate that micro-pond model is viable and well suited to the local context. "Farmers will cooperate when there is compelling need to do so - and nothing can be more compelling than economic benefit. However, there is administrative simplicity in keeping the production process individualistic and decentralized, wherever possible. The advantages of centralization are best felt at the market and input stages," says Luke. With the construction of nearly 2000 fish ponds, IDE runs the largest fisheries project in Nepal.

Partnering with the Government: GO-NGO relationships

IDE works closely with government to leverage resources such as finance, infrastructure and field personnel. IDE believes that the government is in the best position to deploy IDE's interventions on a large scale. Therefore it actively seeks opportunities where its initiatives can be aligned with social objectives of the government. In the process, it also provides training and knowledge inputs to government staff members so that IDE and government employees can work as a team. This has resulted in a trust based relationship of interdependence between IDE and Nepal government, which is quite remarkable given the usual perception of bureaucracy

11 1000 kilograms

12 Under the WFP, 1120 kilograms of rice is provided to villagers for constructing a 300 square metre of fish pond at the rate of 4kg per day per person. It is assumed that each pond will take a group of 7 villagers construct a pond in 40 days. This rice is valued at approximately NR 30 / kg in the market.

that is associated with government institutions. Dr. B K P Shaha, Secretary in the Ministry of Agriculture and Cooperatives (MOAC), says, "The root cause of political turmoil in Nepal is social inequity and poor condition of many of our farmers. We can significantly improve the situation if we can generate employment and increase income of the poor farmers. And IDE initiatives help to address this fundamental issue. We need rural transformation in Nepal and we see institutions like IDE as important enablers of government efforts to increase farm income and reduce rural poverty". Social mobilization, development of market linkages and ensuring continuity are the key reasons that have endeared IDE to the Nepal government and resulted in successful implementation of programmes in a partnership model between the government and IDE.

"The government and INGOs have complementary skills. With IDE partnerships, the result has been to get the best of both", says Dr. P P Mainali , Joint Secretary in the Planning Division of Ministry of Agriculture, Government of Nepal. "The government can provide funds for developing infrastructure; the government has a team of officials in the field who can implement various initiatives. However we are not good at social mobilization, neither are our skills and expertise updated so that they can be used to address field level concerns on a dynamic basis. This is where IDE is good. They supplement our resources, provide training and education to our personnel and increase our effectiveness. Above all, they are able to create vibrant communities out of the marginalized farmer groups. Lot of INGO's operate on a project mode. They employ external consultants, who do important work during the project. However, they move on as soon as the projects get over resulting in discontinuity of their initiatives - very soon, all the good work that they did are undone. However, with IDE, there is continuity even across their programmes".

Mr. Kamal K Jha is the Senior Agricultural Development Officer in Banke district and has been closely associated with IDE projects since 2004. He feels that IDE's approach has brought about changes in the thought process of policy makers. "Earlier, our efforts (in the department of Agriculture) were only focused on production. IDE introduced us to the concept of value-chain, which is to look at the entire set of activities, i.e., inputs for agriculture, water management, irrigation, farm processing and marketing. With this approach, the economic conditions of poor farmers improved significantly, because not only are we helping them to produce, we are ensuring that they are able to sell their produce and get the best possible price. With increased income, the farmers are able to build assets, get better quality nutrition, and have access to healthcare. We can see the transformation happening very fast, even though its full impact might take several years to unravel. Programmes like SIMI have thus created the base on which the government can build its efforts. Unlike other training programmes in government organizations, the training that IDE provided to our department was focused on addressing the specific needs of the farmer". Mr. Jha is so impressed with the benefits that the IDE-government partnership has achieved that very soon he is planning to hold a workshop with the various development organizations operating in his district to explore how his department can work with them in solving problems of smallholders and poor farmers.

Thapa Mould & Die: Drip irrigation systems manufacturer

IDE works closely with entrepreneurs who manufacture micro-irrigation equipment that is an essential input for developing the value chain. Thapa Mould and Die, located in Lalitpur at the outskirts of Kathmandu is owned and run by Mr. Chandu Thapa, who proudly calls himself a "Die Specialist". And he has every reason to be proud because the constant innovations that he makes with his dies, machines and equipments on his factory shop floor have made IDE Nepal appoint him the exclusive manufacturer of drip irrigation systems.

Chandu started working with IDE around 1998 and today manufactures close to 7000 drip irrigation systems annually, of which more than 70% is implemented in IDE projects. Drip irrigation systems come in five different sizes, ranging from coverage of 90 square meters costing NR 1600 to 1000 square meters costing NR 6750. Since IDE works mostly with smallholders, 90% of the demand is for the smallest system. At a price of NR 1600, Chandu provides 10-15% retailer margin, spends 4-5% in transportation cost and is

left with a margin of 10%. "We manufacture the entire annual demand in three months flat so that we can concentrate on other jobs for the rest of the year. The margins are not very high, but I do this for the sake of reputation. It helps to be associated with IDE and the projects that they do," says Chandu. IDE provides constant support to Chandu, starting from the finance needed to setup his manufacturing facility, investing in moulds and dies, to providing training necessary for consistent quality in output. IDE had fixed the upper limit of prices that Chandu can charge his customer - however, IDE is open to considering impact of increasing costs and investments so that Thapa Mould and Die remains profitable. After working with two other assemblers in Pokhran and Surkhet, IDE decided to have Thapa Mould and Die as their only manufacturer and assembler. This, they analyzed will reduce costs and increase consistency in output. It will also ensure faster delivery of systems to the farmers because unlike Thapa Moulds, the assemblers were unwilling to stock products, which used to result in delays in supply. Since the crops that IDE encourages smallholders to cultivate have short crop cycles, such delays can result in loss of critical opportunities. As the two assemblers are also distributors for IDE, they were comfortable with the new arrangement. This might also reduce the final price because of the economies of scale that Thapa Mould will gain.

IDE's design team works with Thapa Moulds for product innovation. Recently they evaluated flat tubes of larger volumes (12mm to 20 mm in diameter) being used by IDE India in their drip irrigation system, which had the advantage of being customized for the use of the farmer. However, these tubes were made of LLDP[13], which were cheaper but made the tubes cumbersome. IDE decided to create such flat tubes with PVC[14], which they had been using for manufacturing smaller (8 mm) round pipes. Chandu experimented on his shop floor and invented a unique way of using his existing machines to produce the 16mm flat tubes even though these machines were originally designed to produce only 8 mm round tubes. IDE design engineers were pleasantly surprised because this, coupled with other innovations that they have introduced can result in significant cost savings. While the field tests for the new product are continuing, initial results are very encouraging. IDE engineers expect that if their combined efforts are successful, these flat tubes can reduce the overall cost for larger drip irrigation systems by 20%.

Unlike drip irrigation systems, IDE has five manufacturers for treadle pumps. Treadle pumps are technologically much simpler to manufacture and IDE has evaluated that a decentralized system of assembly by multiple suppliers is more suitable for their operations.

Financial Assistance

One of the key challenges for IDE in implementing its programmes is to raise finance. While IDE receives significant support from donor agencies such as USAID and other developmental organizations such as the United Nations' World Food Programme (WFP), such funds are never enough to meet all the necessities of the poor farmer. Funds from donor agencies are received for specific periods[15], which create problems for sustaining the interventions. Likewise, aid agencies have their own objectives, which might not completely converge with that of IDE. For example, IDE has been able to run successful partnership with UN's WFP, which is a very mobile organization focusing on areas suffering from acute food shortages and unlike IDE, does not have income generation for the farmers, as its primary goal. However, WFP acknowledges that linking the "food for work" programme with IDE's programmes of income generation, as in the case of micro-ponds, would lead to long term improvement in economic conditions of the target population, over and above helping them to tide over a crisis situation.

Thus, IDE makes constant efforts to tap sources that can provide financial assistance to the poor farmers and smallholders so that they can buy products (e.g., seeds, irrigation equipment) and build infrastructure (e.g., collection centre for storage and sales of farm products) that is necessary for farming and taking the farm outputs to the markets. The banking sector does not provide loans to small farmers because of high transactions costs[16] and lack of any guarantee that the poor can provide. Microfinance institutions are not well developed in

13 Commercial plastic derived from Linear low-density copolymer of ethylene

14 Commercial plastic derived from Polyvinyl Chloride polymer of ethylene

Nepal; neither is the microfinance model suited for agricultural loans[17]. Therefore, IDE has been working with the government at various levels such that block development and other grants can be used to provide finance to the farmers. "Vegetable farming with the right set of input and marketing information results in significant profits for the farmers - our model has shown this time and again. The paradox of the situation is despite the potential for such profitability, the farmer today is starved for funds. With financing he can buy more of good quality seeds, get better agricultural equipment and cultivate greater areas. But there is nobody who is willing to lend him the initial capital", laments Luke.

Of late, IDE has identified a potential solution to this problem, once again leveraging their good relationship with the government and the efforts that they have put in to develop communities among the poor farmers. The government of Nepal launched Youth Self Employment Fund (YSEF) Programme where commercial banks need to allocate one-third of their 3% deprived loan portfolio for providing loans to young entrepreneurs at 10-12% rates of interest without collaterals[18]. Those seeking loans need to get certified skills training from institutions such as the Federation of Nepal Chamber of Commerce and Industries (FNCCI) and put forth a proposal before the bank about their venture that is based on their acquired skills. IDE has signed a memorandum of understanding with the ministry of finance and commercial banks that it will provide skills training to poor farmers and certify successful completion of such training which the farmers can then use to get loans. IDE is helping the farmers to write business plans for procuring loans that can be used to finance purchase, installation and usage of MITs and MUS. Under instruction from the Central Bank of Nepal, nearly NR 3 billion has been kept aside by the commercial banks for financing this initiative and till date there have been close to 700,000 loan applications. Dealing with such large numbers and screening the loan applications is a big challenge for the banks, which are quite apprehensive of making these loans without collaterals.

However, given IDE's record of working successfully with poor farmers, the banks seem to have a lot of faith on candidates who have been trained by IDE and whom IDE has helped to write the proposals. To minimize the perception of risk, IDE has encouraged the farmers to apply in groups such that the MPC's can provide some kind of guarantee to the banks about the authenticity of the endeavor. IDE has also provided adequate information to the bank officials about their projects and taken them for field visits so that the bank officials can see first- hand where and how the money that they are lending will be put to use. "Till date, there has hardly been any linkage between the MPC's and the financial service providers. We are hoping to use this programme to build such linkages. Our target is to get loans for about 600 farmers who are involved in our projects. We are already receiving very positive signals from the banks about their comfort with our candidates", says Dr. M Pariyar, who has been looking after the financing initiaitive from IDE.

Challenges Ahead

With a per capita GNP of US$ 238, Nepal is one of the least developed and poorest nations in the world. While agriculture contributes to about 38% of Nepal's GDP, close to 81% of Nepalese population is involved in agriculture. However, the annual rate of agricultural growth over the past decade has been less than Nepal's population growth, resulting in Nepal importing food grains. There are several constraints working against agricultural growth in Nepal, primarily because it is a mountainous country; only 18% of Nepal's total land is cultivated, of which only 44% is irrigated[19]. Moreover, agriculture in Nepal has remained traditional, with limited diversification or commercialization, resulting in low farm income and close

15 USAID fund for SIMI was initially planned for two years, beyond which it was renewed three times. Despite the significant positive impact of the programme, further renewal was against USAID policy and therefore SIMI programme had to be terminated

16 High transaction costs arise because the loan amounts needed by poor farmers are small and they do not posses any assets that can be provided as collaterals. Therefore, lending institutions have to spend additional efforts in evaluation, monitoring and verification of the credit worthiness and how the loaned amount is being utilized. This additional effort needed for servicing small amounts of loan makes lending financially unviable for commercial banks. Microfinance institutes specialize in lending small amounts. However, the high transaction costs that they incur result in very high interest charges, ranging from 24-32%.

17 Typical microfinance models involve weekly collections with loan repayments starting from one week after the loan has been disbursed. Thus, they are suitable for activities that generate constant cash flows, rather than for agriculture where cash inflow is lumpy and happens towards the end of harvesting season

18 The government will provide 60% subsidy on interests charged if the loans are repaid on time

to 40% of people is living below poverty line[20]. Political uncertainty has further contributed to poor economic development, with Nepal receiving insignificant amount of Foreign Direct Investment[21].

Therefore, IDE Nepal's interventions in providing agricultural technology to smallholders as means of increasing income and reducing poverty are ideally suited for the Nepalese economy. Nepal's economic development will have to be rooted in agricultural productivity improvement that would involve conservation and better usage of scarce resources such as water, implementation of technology suitable for smallholders, crop diversification and establishing linkages with markets for commercialization. However, several challenges remain. Given its lack of infrastructure especially in rural areas, the transaction costs of any business activity in Nepal, be it financial services or supply chain of farm outputs is very high. Thus, IDE needs to continuously work with the government and other institutions in order to improve access of poor farmers to complementary services such as micro-credit, insurance, post harvest facilities, transportation and timely information about demand and prices. Only then would the potential of rural Nepal be fully realized. Nepal is a small country with open borders. This implies that it is unlikely to have tight control over prices of its agricultural output. At relatively small levels of production, the farmers can take opportunities of local variations in demand supply conditions and command good prices in the market. However, with substantial increase in farm output, Nepalese farmers need to compete in global markets, implying the necessity for creating some kind of competitive differentiation. Else, the small farmers will remain 'price takers' subjected to the vicissitudes of global commodity pricings, rendering the linkages between farm productivity and increased income tenuous.

Finally, convincing international donors and raising finance for their interventions remains IDE's continuous challenge. Different donor agencies have different policies and expectations, which do not always suit the kind of intervention that IDE intends to bring about. "Some donor agencies have grown short term these days. While they have their governance reasons for keeping the project durations short, it does not work well for agricultural projects. It makes planning difficult and increases project uncertainty. Projects need to be of minimum five years duration in order to make and sustain the impact", says Luke. The quantifiable as well as the non-quantifiable impact of IDE's work so far provide ample proof of how IDE has been able to sustain continuity in their interventions despite termination of projects and change in donor agencies.

IDE thus presents an ideal model of intervention by a development organization, which if replicated by other institutions and organizations holds the promise of bringing about large scale economic and social transformation among economically impoverished communities and nations.

Note: An earlier version of this case was presented at International Case Conference, November 2010, Goa, India.

19 Source: Agricultural Development in Nepal, C Pokharel, in "Agricultural Diversification and Smallholders in South Asia", P K Joshi, A Gulati & R W Cummings (eds.), Academic Foundation, N Delhi pp: 271-295, 2007.

20 As estimated in Nepal's 10th Five Year Plan (2002-2006)

21 FDI in Nepal has been respectively US$ 7, 0, 2 and -7 million between 2003 and 2006, according to Least Developed Countries Report 2008. Unofficial estimates suggest that FDI in 2008 was US$ 6 million while international aid was close to US$ 1 billion.

Figure 1: Districts where IDE operates in Nepal

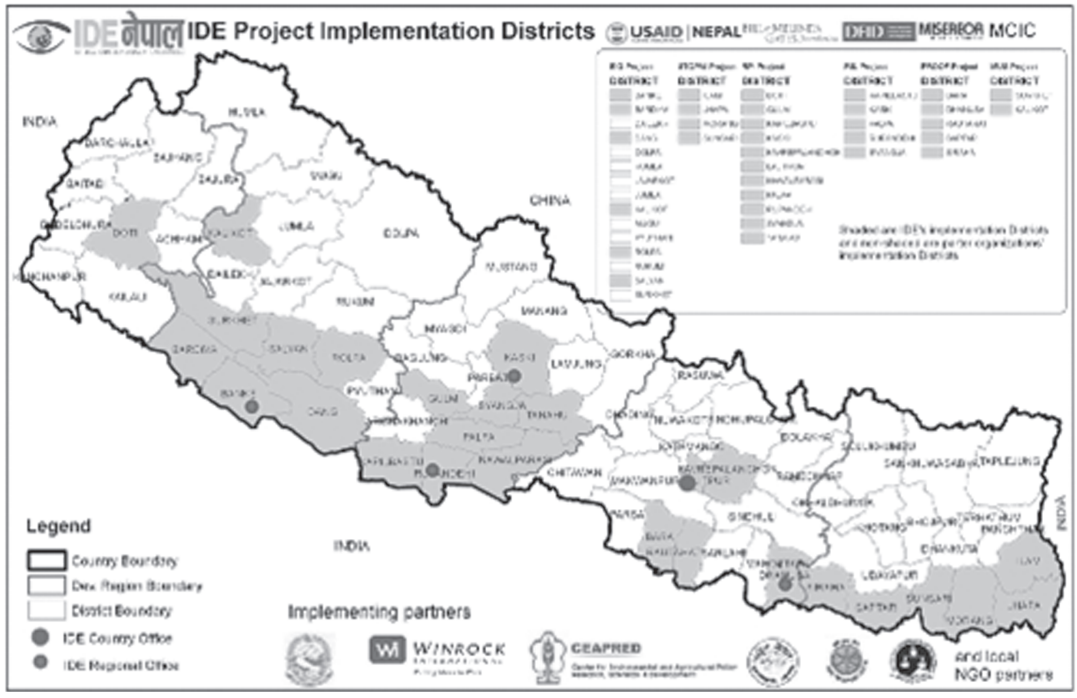

Figure 2: IDE Nepal's Organization Structure

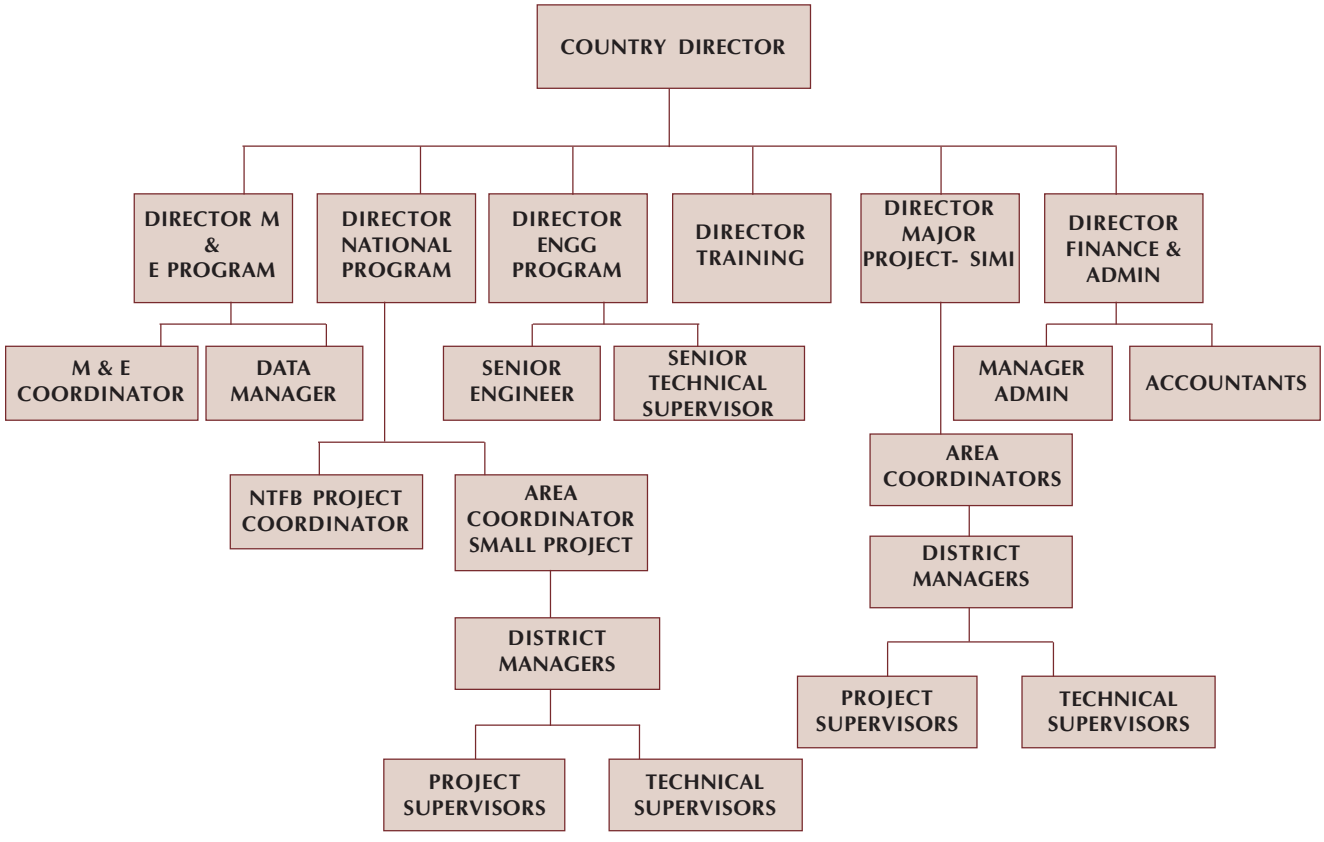

Table 1: Select Current and Recent projects Implemented by IDE

PROJECT	YEARS	DONOR/PARTNER	DONATION AMOUNT	DESCRIPTION	IMPACT
Rural Prosperity Initiative (RPI)	2006-10	Gates Foundation	$1,013,638	Support the development of water control and micro irrigation technologies to increase income	7,763 households registered. 7,800 MIT adopted. 405 Farmer Groups formed. 24 MPCs formed. 4 Districts and 43 VDCs are covered.
Smallholder Irrigation Market Initiative (SIMI)	2003-09	USAID/ Winrock (Prime)	Total project budget : $ 9,026,038 (IDE portion: $ 3,723,078)	Promotion of micro-irrigation through development of supply chains for equipment and inputs.	85,659 households (3,713 farmer groups) increased their income on average by $ 271 covering 28 of Nepal's 75 districts.
Research into Use (RIU)	2008-10	NRI International/ DFID	£186,769	Enable smallholder producers to access markets, working with MPCs created through RPI and SIMI programs	5,206 households covered. 288 Farmer groups and 20 MPCs benefited. 5 District and 46 VDCs covered. Around 200-400 kg additional collection of vegetables increased. 164 additional traders have started collection from Collection Centers.
Education for Income Generation (EIG)	2008 -13	USAID/ Winrock (prime)	$836,170 (IDE Part only)	Micro-irrigation for off season vegetables to generate income, developing training packages for institutional impact	17,138 households covered which includes 81% of female. 15 Districts are covered. 451 MIT promoted.
PROOF	2006-09	MISEREOR	•236,000	Developing farmer led organizations for agricultural development	9,172 households, 227 Farmer Groups, Micro Finance Loan Rs. 16,225,000 was disbursed to 1,047 project households.
Business Development Services - Marketing & product Services (BDS-MaPs)	2004-07	USAID/ IDE (prime) with Winrock	$3,639,155	Commercialization of non timbre forest products such as oils, herbs and spices for exports	BDS MaPS directly and indirectly reached 27,083 households. It directly increased incomes of 10536 households by an average of US$132.6.
Tea & Coffee Global Development Alliance (TC-GDA)	2004-07	USAID/ Winrock (prime)	Total Project Budget: $ 350,000 (IDE Portion: $ 70,000)	Public private partnership programme for tea and coffee industry development. Branding of Nepal Tea, establishment of Tea Code of Conduct	Increased incomes of 20,880 households, currently producing coffee and tea, by 94%. Facilitated new production by 8,680 smallholders. Established specialty coffee industry with exports of US$500,000 in 2007. International recognition for Nepal Tea.
Ujyalo (Light)	2005-07	USAID/ SAVE (prime)	$945,452 IDE Part only	Peace building linked with income generation to address root cause of conflict	Increased income of 13,955 households (721 farmer groups) by $ 171. (WI/IDE were responsible for meeting the goal of IR 8.1: enhanced opportunities for sustainable incomes in conflict-affected areas).

Table 2: Training Expenses for IDE Nepal for Different Modules

Description	Cost to IDE per person in Nepali Rupees
Mobile Training	700
One day residential	1500- 2000
Two to three days residential	15000 - 21000
Five days residential	35,000 - 50,000
Thirty five days	22,000

Source: IDE Nepal

Table 3: Number of Marketing and Planning Committees (MPCs) created for an Illustrative List of IDE Projects

Project Description	Number of MPCs Formed
SIMI	91
RPI	25
EIG	19

Source: IDE Nepal

Sourav Mukherji is an Associate Professor at the Indian Institute of Management Bangalore. He teaches post graduate and doctoral level courses on Organization Design, Inclusive Business Models, Strategy Process and Organization Learning. Sourav did his Bachelors in Technology from IIT Kharagpur (1993) and obtained his doctorate from IIM Bangalore (2002). After completing his engineering, Sourav had worked with information technology firms such as IBM and Oracle in various product management functions (1993-1998). After his PhD, Sourav worked for the Boston Consulting Group as a strategy consultant (2002-2003).

P D Jose is an Associate Professor at the Indian Institute of Management Bangalore. He is a Fellow in Management from IIM Ahmedabad. His research areas include Strategy Formulation and implementation; Crisis Management; Organisational Renewal; Competitive implications of environmental regulations; Business and society linkages. He has many publications to his credit.