EXPERIENCE CAPITALIZATION

FIGHTING RURAL POVERTY IN INDIA, NEPAL AND BHUTAN

06

CTA

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Investing in rural people

The "Capitalization of Experiences for Greater Impact in Rural Development" project is implemented by CTA in different parts of the world, in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and the Inter-American Institute for Cooperation on Agriculture (IICA), and with financial support from IFAD, the International Fund for Agricultural Development. This project aims to facilitate the adoption of an experience capitalization process in rural development initiatives, where it can help improve the analysis, documentation, sharing, and the adoption and use of lessons and good practices – as an approach for continuous learning, improvement and scaling up.

The cases featured in this booklet were selected and written by those participating in the project. Responsibility for the information and views set out in each case lies entirely with the authors. Reproduction is authorised provided the source is acknowledged.

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CTA, 2018. Fighting rural poverty in India, Nepal and Bhutan.
Experience Capitalization Series 6
Wageningen, the Netherlands, CTA.

ISBN 978-92-9081-639-3

Investing in rural people

FOREWORD

For more than 30 years, CTA has been supporting and implementing rural development projects in countries in Africa, in the Caribbean and in the Pacific region.

During this period, it has also had the chance to work in other regions. One opportunity was given by the "Capitalization of Experiences for Greater Impact in Rural Development" project, that CTA implemented in collaboration with the Food and Agriculture Organization of the United Nations (FAO), with the Inter-American Institute for Cooperation in Agriculture (IICA), and with financial support from the International Fund for Agricultural Development (IFAD). During the past two years we have been working with projects and organisations in India, Nepal and Bhutan, encouraging them to adopt an experience capitalization process as an approach that can help improve the analysis, documentation, and sharing of lessons and good practices, and ultimately their adoption and use. The process has been enriching and very illuminating!

The stories in this booklet come from different teams, all of whom work in a very diverse environment and focus on different intervention areas. But even though hugely heterogeneous, they all show clear lessons and recommendations, all of which are relevant for all of them, and also relevant for those working in other regions. The purpose of this booklet is to encourage practitioners to adopt them, and to draft and start new projects which can reach a larger target group and achieve even better results.

We invite all readers to help us disseminate them, and in this way also help build the reputation of experience capitalization as a successful approach for continuous learning, improvement and scaling up.

Thierry Doudet
Programme Manager
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INTRODUCTION

Learning from experiences in rural poverty reduction

In initiating and reinforcing a systematic approach to learning from development experiences, CTA invited a number of organisations working in remote rural parts of Nepal, Bhutan, Indonesia and India. The idea was to introduce Experience Capitalisation as a particularly effective methodology for this purpose. Participating organisations were expected to use this knowledge to document and analyse their own work over a period of 3-4 months with support from colleagues, partners and the communities they were supporting. This resulted in a set of written documents aimed at sharing findings with wider audiences. The finest twelve of these find a place in this collection.

These stories go beyond what was achieved and what was not, to delve deep into lessons learnt, mistakes made and challenges addressed. They not only teach those who were part of these initiatives, but unfold rich wisdom for others still on their development journey.

While all reflections relate to interventions made in remote areas – many in the hard terrain of Himalayan mountains – a few specifically target natural resources management as imperative to sustainable livelihoods. These include a novel effort to decentralize and democratise agro-biodiversity in Southern India keeping community at the centre; sensitising community members to the necessity of conserving animal – including the Snow Leopard – and plant life in the cold and arid region of Ladakh to revive the symbiotic, harmonious but delicate balance between man and nature; and a community-led and community-managed exercise to map naturally existing water springs that have come under tremendous pressure due to rising population and use of water.

Poor and marginal communities are the primary subject of all other project interventions covered, including strengthening current occupations like goat rearing, experimenting with alternatives like poultry, or using unused or degraded resources to create livelihood opportunity as in the case of the revival of barren lands by growing a suitable crop like pomegranate. Almost all stories – whether covering smaller geographical area, smaller populations or spread over very large population as in the case of JEEViKa in the state of Bihar in India – are dotted with innovations in institutional development, community participation, delivery of services, capacity building, financing, entrepreneurship and much more. Women and their empowerment is the subject of the two stories from Nepal and explore how access to finance and business skills can help them out of poverty.

Finally, it is a treat to learn from the documentation of the three initiatives that are using digital tools – a GIS-based system to accurately and efficiently identify ponds spread over a vast area; a mobile phone-based information system for fishermen – providing from weather warnings to information about prices in the wholesale markets; and an online system to monitor project activities spread over difficult and inaccessible terrain. They discuss the challenges in the use of digital tools, their potential and real benefits, and the ecosystem needed for the success of these in supporting poverty reduction efforts.

I invite you to become part of these journeys, some of which have not ended as yet. Learn from them, take what you find of use, and add back to the pool of this ever growing capitalising experience.

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NATURAL RESOURCES

A SPRINGS MAPPING EXERCISE IN MEGHALAYA

Rose Christine M. Kharsyntiew

The state of Meghalaya, in north east India, suffers from water shortages due to its hilly topography and the inability to store rain water. The Institute of Natural Resources in Shillong, under the Meghalaya Basin Development Authority, is carrying out springs mapping and springshed development initiatives to enhance the availability of water from the local springs, all of which are improving the situation for the local population.

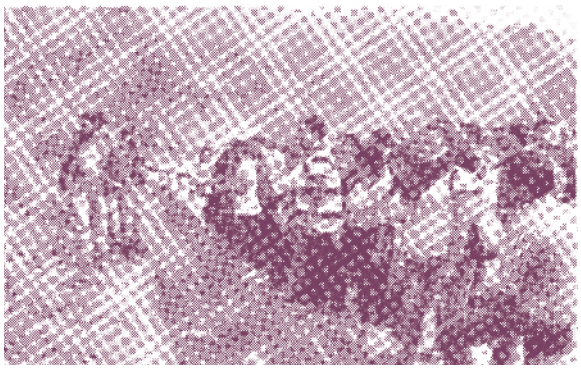
Cover Carefully documenting the state of all springs in the state

Meghalaya has a population of approximately 30 million inhabitants, and is predominantly an agrarian state with about two thirds of its population depending on agriculture for their livelihood. It ranks amongst the wettest regions in the world, with an overall annual average rainfall of 280 cm. According to the estimates, the state has over 50,000 springs, and 78% of the total number of villages (approx. 6,800) depend on springs as their main source of water for household, drinking and irrigation purposes. A sample survey of the springs by the Institute of Natural Resources (INR) in 2015 revealed that over 54% of the springs had either dried up or their water content had significantly reduced in the past few years. Impaired springs have caused widespread water stress in the rural landscape. So despite heavy rainfall, the state suffers from water shortages. This is mainly due to its inability to store and capture the rain water because of its location in the hilly areas, which leads to increased surface water runoff.

Another major cause of water stress in the state is its high vulnerability to climate change. The preliminary studies and hazard analyses carried out in Meghalaya by the INR to assess climate change vulnerability indicated that:

- runoff is as high as 50% in exposed areas due to the loss of vegetation and a decrease in ground water recharge, even during monsoons;
- ground water recharge decreases during winters, and frequent terminal droughts cause complete drying of over 50% of the springs (where 'terminal drought' refers to the early cessation of rainfall);
- early season droughts occur frequently with late or normal monsoon onset, followed by 15-20 days of dry spells;
- there are few but highly intense rainy days with a long mid-season dry spell;
- evapotranspiration rates and water stress is high in forests and agricultural crops, with increased dependence on springs; or that
- crop management (mainly vegetable) is difficult due to flash flood-like situations during intense rains, particularly in the Garo hills.

Many areas are water stressed due to the growing gap between the demand and the supply of water, leading to the population depending more upon – and exploiting – ground water. Change of land use, deforestation, quarrying, mining, soil erosion, *jhum* cultivation (the local term for slash and burn agriculture practiced by the tribal groups in the northeastern states), draughts and floods are perceived to be the main causes for the deterioration of springs and ground water regimes, which in turn, adversely affect agriculture, livestock and other allied livelihood activities. Therefore, springshed development



Left *Master trainers were selected from the soil and water conservation department, the water resources department, the community and rural development department*

initiatives are a priority in Meghalaya, and spring mapping – as the initial stage – is equally important. The initiative will create a positive impact by improving, rejuvenating and reviving the springs.

Springs mapping

The limited availability of quality data on water resources, hydrology and climate, especially at the local level, is posing challenges to make informed and economically, environmentally and socially appropriate decisions and plans for resource utilisation, and investment and management arrangements in the water sector. Therefore, the process of springs mapping is very important as it serves as a database for decision-making on initiatives related to the development of a springshed, as the area within the ground or surface water basin that contributes to spring flow.

Springs mapping was started in 2015 by INR Meghalaya, which is one of the institutes established under the overall umbrella of the Meghalaya Basin Development Authority (MBDA). This started as part of the project called *"Rejuvenation and Climate Proofing of Springshed for Livelihood, Water and Food Security in Meghalaya"*, under the National Adaptation Fund for Climate Change (NAFCC). Springs mapping exercises take place in all the 11 districts of Meghalaya: in 46 community and rural development blocks that cover around 6,800 villages.

The main objective of springs mapping in Meghalaya are:

- To create an inventory of the springs in the state;
- To develop a Meghalaya spring atlas by sending data to the GIS lab;
- To determine the vulnerability of the springs;
- To rejuvenate and revive the critical springs and springsheds;
- To ensure water security by integrating traditional and scientific approaches to sustainable spring protection;
- To create para-hydrologist and master trainers for springs mapping and springshed rejuvenation through training and capacity building activities (as trainers who then train other members of their village or block);
- To develop resource materials and tools for monitoring the springs.

The information being collected during the springs mapping exercise includes the spring's name, latitude, longitude, elevation, village, district and spring dimension (their general identification details); the physical description – information on rainfall, sanitation and infrastructure; the necessary monitoring parameters, such as the level of spring discharge; and also some basic geological information, such as rock type, structural features, soil, spring type, strike dip and dip direction. The first 2 years of springs mapping was carried out in direct partnership with Arghyam, an organisation based in Pune, and with the National Springs Initiative, drawing experience and support from the initiative's diverse network.

Intensive training was conducted for a set of master trainers drawn from the soil and water conservation department, the water resources department, the community and rural development department. It also considered registered volunteers with MBDA, as well as other agencies. The master trainers then conducted extensive training at the district level, focusing on decision-makers and departmental field staff, local leadership from village *durbars* (local self-governments) and selected members of the community who would become para-hydro-geologists. To date, 262 master trainers have been trained on springs mapping. The master trainers, along with the support from INR and the Basin Development Units (BDUs) located in the 11 districts of Meghlaya, are also conducting springs mapping exercises in different villages of Meghalaya. A total of 1,388 springs were mapped between April 2015 and June 2017,

INR Meghalaya, along with the knowledge management team from MBDA, has also developed information series, booklets and newsletters related to

Proper guidelines and policies for springs mapping also need to be developed and disseminated to all the blocks and master trainers so they are all working along the same lines and towards a common goal.

springshed development in order to raise awareness. They were published on the INR and MBDA websites (www.inrmshillong.org and www.mbda.gov.in, respectively). The institute also shares information with the line departments in Meghalaya and other institutes under MBDA and the BDUs in order to avoid overlapping or duplicating the work.

The process, however, faced a few challenges. Private individuals own 90% of the land in Meghalaya, so the government has very little leverage to mandate or regulate the use of resources directly. Considerable knowledge sharing with the community must be done to raise awareness and convince landowners of the value of springs management. A proper guideline and policy is not available to master trainers, which also hinders the smooth functioning of springs mapping.

Another major challenge faced by the springs mapping team was the lack of available instruments, such as GPS and tracers – a device used to measure water quality parameters. One GPS and one tracer were required per block (of which there are 46) for the smooth running of the project, but INR currently only owns six GPS devices and ten tracers. Clinometer compasses used for measuring the dip and strike direction, and abney levels used for measuring slopes, are also not available.

There is no baseline data on the location of the springs, the number of springs or the topography of the area in Meghalaya. It is also difficult to find the recharge location of the spring in the main city due to increased population and housing. All the work started from scratch and was thus time consuming and demanding on human resources.

A positive impact

A sample survey of the springs mapped revealed that over 54% of the springs have either dried or been impaired. Through springs mapping, the team was able to understand the water discharge, water quality, scarcity of water and the necessary initiatives to be taken up. Knowledge about each village was also developed, i.e. whether water is in surplus or deficit supply. People were sensitised on water management to harness maximum water during the peak season. Through springs mapping, it was also observed that most of the springshed conserving villages are not users of the spring water. Therefore, villages on higher reaches were encouraged to protect the catchment and were made aware that they would be compensated for their environmental services by villages using the spring water.

In addition, the team has seen:

- **the creation of a local cadre to map the springs.** By the end of 2017, 262 master trainers were trained all over Meghalaya, and sensitisation on the springshed initiative was conducted in all 11 districts of the state;
- **the development of springs atlas.** The coordinates of the springs mapped was provided to the GIS team of MBDA and the first edition of the spring atlas has been developed. It is a humungous task to map all the springs in Meghalaya but this will help to constitute scaled baseline data for the springshed initiative programme;
- **participation and ownership.** When the nearby communities or villages heard about springs mapping, some villages came forward to request for springs mapping in their village too. This shows that

Left A total of 262 master trainers are now training others

the villagers have gained knowledge about the importance of spring mapping. The participating communities were keen to rejuvenate the springs because they are their main water supply;

- **the protection and rejuvenation of vulnerable springsheds.** Umtyngar is one of the villages located in the East Khasi Hills district of Meghalaya. The Umtyngar river has been highly affected by sand mining and stone quarrying, meaning the springs discharge around Umtyngar has drastically decreased. In order to solve the problem, in April 2017, INR Meghalaya dug contour trenches around the recharge area of the springs. The springs discharge has since increased compared to the discharge before the initiative and at present, the water discharge is around 490 l per minute. As a step forward, the tree species present in Umtyngar will also be mapped in order to identify and understand the local species for plantation in the area

Next steps

In Meghalaya, 78% of the villages are highly dependent on springs for drinking water and irrigation, but the state still has no records, data or information related to springs. The extensive springs mapping and survey is expected to provide precise knowledge and understanding of the basic characteristics of these springs and their present condition.

In the next years, a total of 306 springsheds in 11 districts of Meghalaya will be covered under the NAFCC as per the project, which is expected to end in March 2020. With these springshed initiatives, the water availability, water discharge and water use efficiency is expected to improve. At the same time, the adverse impacts of climate change affecting water security and agriculture is expected to reduce. Increased ecosystem resilience to climate change and community empowerment may reduce climate risk at the local level.

With around 50,000 springs in Meghalaya, the team will be able to conduct the springs mapping exercise successfully and effectively if the necessary amount of instruments is supplied and circulated. Proper guidelines and policies for springs mapping also need to be developed and disseminated to all the blocks and master trainers so they are all working along the same lines and towards a common goal.

So far, the process has been limited to mapping. Springshed development initiatives and interventions should next be spread widely across the state in order to protect and rejuvenate the springs. Springs mapping will provide the data and information required for decision-making and will help in analysing the vulnerability of the springs, while springshed development will contribute to the protection and rejuvenation of the springs.

The institute must capitalise on the experience of the project in order to grow and understand the successes and failures of the interventions. The data collected will also be helpful for other organisations who want to initiate similar activities, and will enable them to avoid repeating similar mistakes.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: India
Region: South Asia
Date: September 2017
Keywords: Spring mapping; water availability; irrigation; climate change

DECENTRALISED AGRO-BIODIVERSITY CONSERVATION:

A multi stakeholder participatory experiment

Suma T.R., Radha E., Santhosh K.K., Jayesh P. Joseph and N. Anilkumar

Cultivated plant species and domesticated animal species, including their genetic variants and associated plant and animal diversity, are collectively called 'agrobiodiversity'. These resources are at risk with the expansion of industrial agriculture, and maintaining locally adapted native seed materials in micro agro-ecosystems will be vital for ensuring crop resilience to climate change.

This study narrates the learning experiences of a 3-year participatory project – *Networking traditional farmers and local self-governments for agro-biodiversity conservation and Wayanad community seed festival* – implemented with local communities and local governments. The aim of the project was to democratise agrobiodiversity conservation efforts through a seed conservation movement in the Wayanad district of Kerala, India.

Wayanad is a hilly district of south India known for its unique climate and rich biodiversity. The social fabric of Wayanad is a mixture of 12 tribal communities (18.53 % of the population), migrant farm families from different parts of the state (71%), and the rest comprising of government officials, plantation labourers and merchants (12%). Agriculture is the main livelihood activity for all the tribal communities living in this region.

A traditional farming family 20 years ago in Wayanad would have cultivated on average more than 20 varieties of vegetables, eight varieties of paddy, seven varieties of tubers and six varieties of cereals. However, Wayanad has witnessed a large scale transformation (from food crop cultivation to cash crop cultivation) in the last four decades, and diversity is fast disappearing due to land fragmentation, changing cropping patterns, government support to cash crop cultivation, and changing markets and agricultural policies. Traditional farmers still conserving agrobiodiversity are generally poor and located away from the cities.

Networking for agrobiodiversity

The project aimed to integrate community knowledge on cultivating diversity to the formal system of Panchayati Raj institutions (local governing bodies) under the legislative provisions of the Indian Biological Diversity Act (BD Act) 2002. The project is a continuous process as part of the 'Seed Care Movement' which started working around the conservation of crop diversity, the protection of farmers' rights on agrobiodiversity, and the need to find markets for traditional agricultural products. The programme was initiated in 2014 by the M.S.Swaminathan Research Foundation (MSSRF), Seed Care and the Wayanad District Tribal Development Action Council (WTDC), with the objective of

- creating a network of traditional farmers;
- bringing the concept of agrobiodiversity conservation to the local development agenda;
- facilitating the establishment of a public mechanism for the conservation of diverse crop varieties under the provisions of the BD Act; and
- facilitating the establishment of a formal system at the local level to provide continuous support and recognition of custodian farmers.

The initiative started with the support of the Kerala State Biodiversity Board, the Wayanad district *Panchayath*, 25 *Grama Panchayaths* (the local governing bodies of the district), and the farming communities of the district. The National Bank for Rural and Agricultural Development, the Kerala State Biodiversity Board, the Kerala Kudumbasree Mission, and the Kerala State Council for Science Technology and

Cover Leafy green market as part of Good Food campaign

Right Farmer stalls showing the local agrobiodiversity at the Wayanad Community Seed Festival

Environment joined this programme as funding and organisational partners.

The four major components of the programme included community level conservation activities, public awareness programmes, the Wayanad community seed festival and policy deliberations at different levels. The activities were designed to facilitate integration of learning from the traditional farming communities and custodian farmers to the formal systems.

The process sensitised the general public, policymakers, farmers and local governing bodies on the need for agrobiodiversity conservation. The nutritional value of diverse food items was highlighted to the various actors; farmers' rights on seeds and related knowledge systems were discussed; and the science of locally adapted varieties and the increasing climate risks were introduced. Annual seed festivals were planned to maximise varietal conservation through the exchange of seed materials, and district and state level policy workshops were held to discuss existing policy gaps. The public awareness programmes were developed around the concepts of nutrition security and climate resilient farming systems, whilst the policy deliberations at local and higher levels where designed to generate awareness on the BD Act and issues of diversified farmlands.

Farmers' questions and issues were taken to the local governing bodies, and recommendations were divided into practical farm – and policy-level issues, and taken to district and state level decision-makers. Strategic leadership by the Kerala State Biodiversity Board and the district *panchayath* was key in this process.

Strengthening community seed management systems

Each community has different cultural preferences for food and crops, and a different set of knowledge

associated with cultivation and consumption. Kurichya and Mullukuruma are both farming communities with land holdings, but while Kurichya continues with the tradition of large land holdings under collective ownership and cultivation, the agricultural lands of Mullukuruma are fragmented due to a recent shift towards individual management. Paniya residents are largely landless and live in hamlets of many houses in small land areas. Their source of food is the plants and small animals grown in the commons and agricultural landscapes. According to the data collected from the participatory exercise, Paniya residents have lost 81% of their food basket diversity during the last 60 years, Mullukuruma has lost 76% and Kurichya, 54%. The decline in the productivity of traditional varieties is due to land use changes and due to the changes seen in the wider landscape agricultural practices.

In the first year of the project, 22 village level groups were formed among farming families with the objective to reintroduce the lost crop varieties through group farming. The crops were selected according to the cultural preferences and land availability of each community. Maximum diversification through seed exchange between groups was the focus in Kurichya. Rebuilding collective farming practices and diversification was the strategy adopted with the Mullukuruma community. Group building, collective

Figure 1: *On-farm diversity of food crops in Kurichya farms before the intervention in 2014 and after project had been underway for 3 years in 2017*

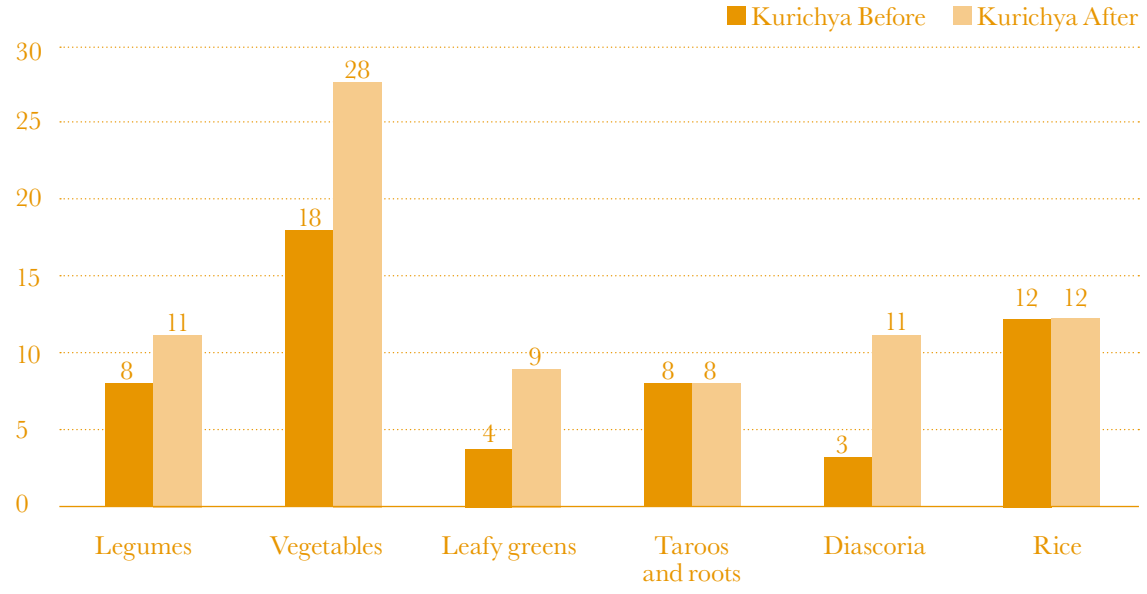
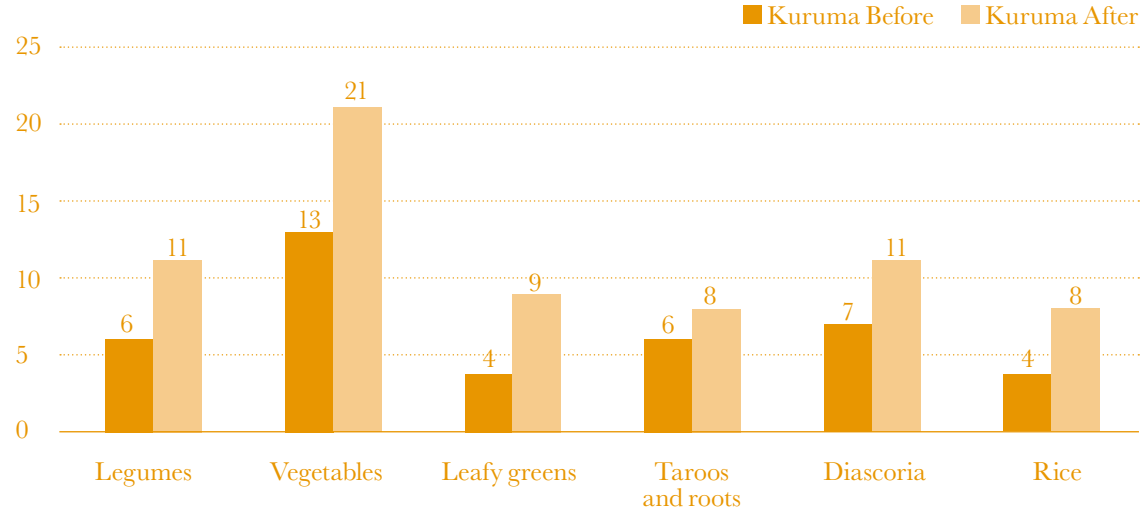


Figure 2: *On-farm diversity of food crops in Kuruma farms before the intervention in 2014 and after project had been underway for 3 years in 2017*



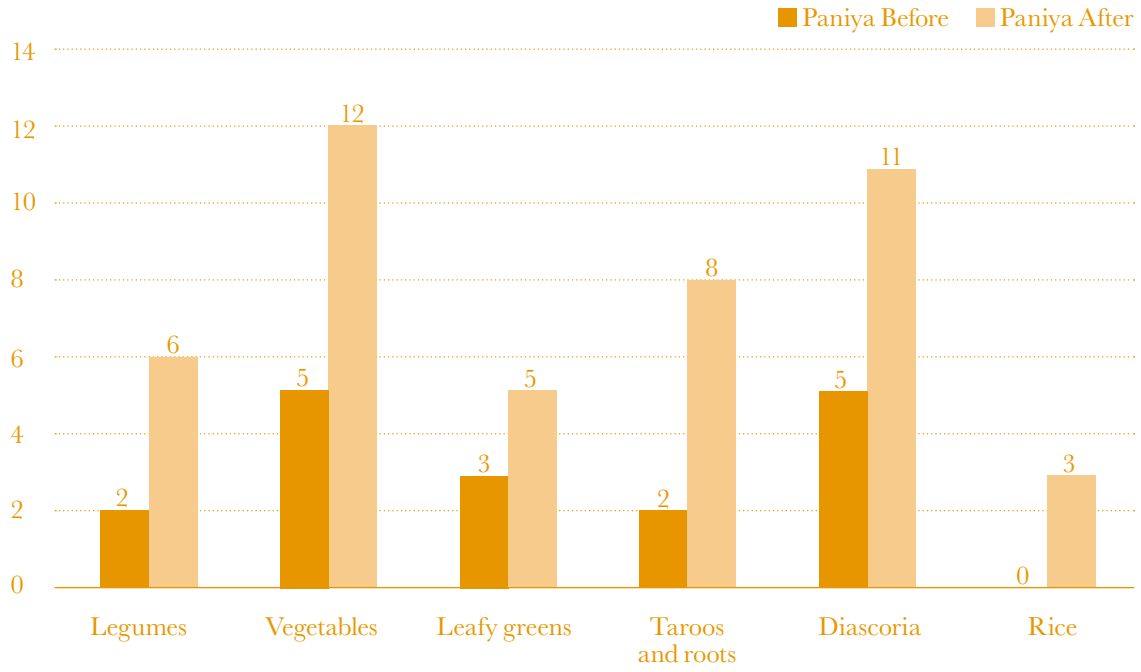
planning and the promotion of organised farming were the strategies adopted in Paniya.

After 3 years, the home gardens of the 22 activity groups – under the ownership of the local women – had been enriched with 28 varieties of vegetables, nine varieties of legumes, nine varieties of leafy greens and eight varieties of taros, tubers and roots on average. There were also 11 varieties of *dioscorea* (root vegetable), and 12 varieties of rice being cultivated by different groups. The Paniya women, who historically were not involved in agriculture, started cultivating three varieties of rice on leased land.

Agrobiodiversity and the local development agenda

Prior to the project, data from the agricultural offices revealed that only 3% of the traditional and tribal farmers were involved in decisions regarding agricultural programmes. In the first year of the

Figure 3: *On-farm diversity of food crops for Paniya farms before and after project intervention in 2014 and 2017, respectively*



Right Seed festivals also served as a platform for exchanging knowledge and information

project, traditional farmers represented 12% of the participants at the *panchayath* level workshops. This increased to 21% in the second year and to 28% in the third year. These meetings helped the *panchayath*s hear the voices of the marginalised farmers. By the third year, a traditional farmer directory had been prepared by each *panchayath*.

The forums discussed the possibilities of conserving agrobiodiversity under the leadership of *panchayath* Biodiversity Management Committees (BMCs – statutory bodies at the *panchayath* level formed under the provisions of the BD Act, and responsible for local level biodiversity conservation). As a result, 12 *panchayath* governing bodies out of 26 discussed the possibility of establishing community seed banks or genetic gardens in their development seminars, and six developed a project for community seed banks under their BMCs. Of the six, four were able to set apart budget provisions for the activity as a development project.

Wayanad community seed festival

An annual seed festival is organised as a platform for custodian farmers to come together and exhibit, sell and exchange their seeds. It is also a platform for knowledge exchange between farmers, children, the general public and the scientific community.

Each year, the number of custodian farmers attending the festival increased by 23%, and under Seed Care, a group formed a network among themselves. By the third year, 226 custodian farmers were members of this seed festival collective.

The socio political and policy concerns raised at the *panchayath* level workshops were taken to academic and policy seminars organised as part of yearly seed festivals. The academic seminars were attended by agricultural scientists, activists, farmers, policy makers and practitioners of agrobiodiversity conservation from different parts of the country.

In the first year, the academic seminar discussed the ground level issues of agrobiodiversity conservation. In the second, it discussed the existing policy and legislative spaces that could be utilised to overcome these issues, and in the third year, an exercise was organised to develop a model for agrobiodiversity conservation in the formal system. The model focussed

This participatory experiment was successful in bringing local public attention to the importance of agrobiodiversity conservation and helped placing it within the development agenda.

on the structure, systems, sustainability and resources that would be involved. This led to a commonly accepted model for a community seed bank with participation of custodian farmers and under the management of BMCs at the *panchayath* level.

Results and challenges ahead

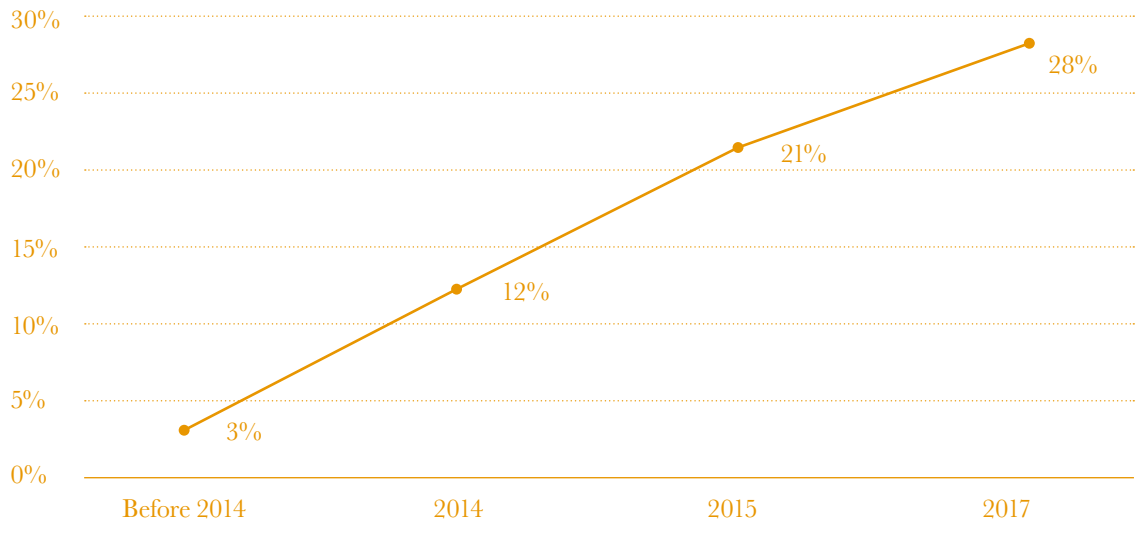
Four *panchayath*s set aside money for agrobiodiversity conservation as subsidies to custodian farmers. The Edavaka Grama *Panchayath* has initiated a seed bank project with 16 rice varieties and runs farm schools to educate children on agrobiodiversity. The district *panchayath* has decided to take over the responsibility of conducting seed festivals in the coming years with budget provisions from the *panchayath* plan fund.

The Kerala Kudumbasree mission, a state level programme initiated by Kerala state Government to empower women and to eradicate poverty, has adopted this people-centred model for agrobiodiversity conservation and set up a community seed bank for rice varieties.

The main challenge faced by the *panchayath*s was the willingness of government officers to take over the responsibility of implementing the projects developed by *panchayath*s. The officers were not familiar with the idea of the seed banks and were reluctant to carry them on.

The approach of this project was based on the decentralisation and participation agenda of present development discourse. The agenda empowered

Figure 4: *Representation of traditional farmers in Panchayath level meetings from before 2014 to 2017*



Right Women selling wild leafy greens as part of the Good Food campaign

traditional farmers by giving them more control over the governance of agrobiodiversity; whilst the involvement of the local government made the project more effective and sustainable.

This participatory experiment was successful in bringing local public attention to the importance of agrobiodiversity conservation and helped placing it within the development agenda. At the centre of this activity was farmer experience and knowledge. The process looked for ways to promote 'bottom-up' engagement and to better place the arguments of traditional farmers in the upper level of development strategies.

At the end of the 3-year project, community seed banks have been put in place by the public sector as a mechanism for conservation. *Panchayath*s are ready to cultivate and conserve traditional rice and vegetable varieties, and according to the final plan evolved out of the participatory exercise, all the crop varieties of Wayanad will be conserved in at least one genetic garden in 5 years. This will be the model to conserve agrobiodiversity in its micro habitats utilising public funding. Through it, Wayanad has come to recognise agrobiodiversity conservation as a public responsibility.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: India
Region: South Asia
Date: September 2017
Keywords: Agro-biodiversity; conservation; crop diversity; participation; seeds

REVIVING THE HARMONIOUS RELATIONSHIP WITH NATURE IN LADAKH

Tsering Angmo and Radhika Khotari

In Ladakh, north India, the Snow Leopard Conservancy India Trust is delivering an environmental education programme to children and adults in the area to revive a sense of harmony between communities and the local wildlife. With new-found appreciation for the plants and animals of the region, the villagers are being more rigorous in protecting the mountains and reserved pastures.

Cover Villagers keep a detailed record of the wildlife in their region

Ladakh, located between the Himalayas, the Karakoram range and the western edge of the Tibetan plateau, has an average altitude of 3,000m above sea level. Its continuous rugged mountain terrain and extended eastern plains harbour a variety of species, which create a unique high altitude ecosystem. Whilst elusive species such as the snow leopard, Tibetan wolf and Himalayan brown bear make up the top of the food chain, the region is also home to smaller mammals such as the Himalayan long-tail marmot, the Ladakhi pika and Pallas cat, and herbivores such as the endangered Ladakhi urial, Tibetan argali and Tibetan gazelle. The designated Ramsar site Tso Moriri, and high altitude lakes such as Pangong Tso and Tsokar, also attract diverse birdlife, including the endangered black-necked cranes and migratory species such as the brown-headed gull and the bar-headed goose.

Completing this mosaic of unique high altitude systems are the local communities of Ladakh. Largely undisturbed by outside influences for centuries, the people of Ladakh have lived in harmony with its harsh climatic conditions and exotic wildlife. The frugality of resources has often led to the creation of innovative agro-pastoralist systems that are both environmentally friendly and self-sustaining. With a deep-rooted respect for nature and a comprehension of human needs, the society was largely self-sufficient and waste free, with every available resource being processed back into the system. This culture of co-existence was seen cutting across Muslim and Buddhist communities across Ladakh. However, whilst livestock rearing was the fulcrum for the livelihood options of these mountain communities, agriculture was only viable in the short summer season. Historically, Ladakh was one of the main trade posts along the silk route, however the society only adopted changes that were reverential to its landscape.

Significant changes to the region during the mid-20th century included the accession of Ladakh into the Indian state of Jammu and Kashmir; the invasion of Pakistan and China of parts of the state and the war with these two countries; an increased presence of defence forces in the region; unplanned development processes and a large influx of tourists. All of these events have helped break the harmonious living systems of the communities. Most school children and monastics in Ladakh are ignorant to the conservation status of the region, and to the activities that hamper the behaviour and wellbeing of the local wildlife. Today, Ladakh, like many parts of India, faces severe ecological threats due to a lack of awareness and a lost respect for the traditional ecological knowledge needed when living within a fragile landscape.

The programme, along with other mitigation and alternative livelihood initiatives, has resulted in the community having a deeper sense of appreciation for the biodiversity of the area.

Our intervention

While working on addressing the issue of loss of livestock due to snow leopard attacks and other predators, and to avoid retaliatory killings of the enigmatic cats, the Snow Leopard Conservancy India Trust (SLC-IT) stumbled upon the chance to revive the deep-rooted respect for nature and harmonious living among the local communities. To change the negative attitude towards wildlife and nature in general, SLC-IT began an environmental education programme in 2014. This started in the villages in which it was already working to resolve human-wildlife conflicts, and to promote the importance of protecting all species to maintain an ecological balance.

The primary objective of the project was to create awareness among local farmers and villagers about the conservation issues besetting the snow leopard and other wildlife in Ladakh, and instill in them knowledge and appreciation of the local biodiversity. The ultimate aim was to change peoples' negative opinions of the snow leopard and other wild predators.

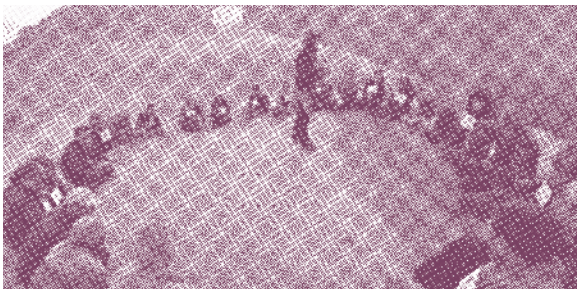
From 2014, and over a period of 3 years, a series of environmental and conservation awareness workshops were conducted to engage villagers in the Sham Valley region of western Ladakh.

Various information dissemination methods, such as nature-based games, activities, talks, videos and posters, were used to instill a sense of appreciation for the biodiversity of the region. After the workshop, participants were taken on a field trip to one of the many biodiversity 'hotspots', such as the high mountain pastures and valleys of Ladakh, where they were familiarised with the birds, mammals and plants they had learned about during the workshop. The villagers were also trained in how to keep a record of the wildlife around their village. During the field trips, SLC-IT taught the local communities to identify the animals, birds and medicinal plant species through a structured environmental awareness programme, and explained their importance for the overall ecological balance of Ladakh. The community was given equipment such as binoculars, spotting scopes and field books to record their sightings.

Name of village	Number of participants	Year
Saspotsey	45	2014
Yangthang	36	2015
Hemishukpachan	174	2016
Yangthag	30	2016
Ulley		2017

Results

The programme, along with other mitigation and alternative livelihood initiatives, has resulted in the community having a deeper sense of appreciation for the biodiversity of the area. Where before they were 'just things' living on the mountain, community members are now able to identify the bird and animal species spotted around the village or in the high pastures, and this ability has changed the attitude of the community towards the local species and the ecosystem they are part of. With a growing interest in wildlife, people have now started recording their sightings and are keeping an inventory that is shared locally among the villages. This practice of maintaining inventories is also, importantly, reviving local and common names for the species,



Right Participants prepare themselves before a field trip to one of the many biodiversity 'hotspots'

and is forming a baseline for monitoring, which had not been possible before. The villagers are also able to share this knowledge with tourists and local stakeholders to promote the cause of conservation in the area.

With a growing sense of conscious living, the local community council is also making efforts to keep a check on the over-harvesting of *burtse* (mugwort) and *Acantholimon* (prickly thrift), which are used as fuel or food. Villagers have been made aware that the unsustainable removal and use of the plants drives wild ungulates (hoofed mammals) away, increasing the chances of a snow leopard attacking their livestock instead of these mammals. The harvesting of the burtse shrub has thus been restricted to the autumn months of late September to October by the council, leaving ungulates like the Asiatic ibex and the Ladakhi urial to feed on it before the onset of winter. Similarly, where ungulates straying into the village were previously shunned away, the locals now generally do not bother them.

With a new interest in local wildlife, Mrs Rigzin Chorol from Saspotshey points out that the white tit birds she used to see every winter are now not seen, and were absent for the entirety of the last winter. Whilst anecdotal, such observations are important as there is no baseline data on birds in Ladakh, and this indicates a change in the bird visitation patterns.

Villagers are also recording snow leopard occurrences near to the periphery of the village, and are informing SLC-IT of the same, thereby supporting monitoring programmes on the elusive species. Communities have also started becoming more vigilant about ensuring that no poaching or bio-piracy is taking place in the mountains and reserved pastures by questioning and recording the visits of independent trekkers or strangers to the area.

The adults receiving the SLC-IT environmental education programme are able to reinforce the message of nature conservation to their children, who have also been receiving environmental education by SLC-IT for the last 6 years. The generations who witnessed a shift in the local economy and traditional practices during their lifetime are now trying to go back to the traditional ecological practices of the past, along with the village elders. There has been a revival of interest among the community to study medicinal plants due to the onslaught of unknown diseases to the area. A new-found respect can also be seen for traditional agro-practices as more people are acknowledging the harmful effects of pesticides.

Conclusions

After undergoing drastic changes in a short period of time during the 20th century, the new generations and communities of Ladakhi have become devoid of traditional knowledge and practices. However, the SLC-IT intervention has generated a revived sense of appreciation among the villagers for the traditional culture and way of living. As Tundup Tsewang, from the village of Hemis Shukpachan, mentioned, 'Such programmes are very helpful and beneficial for people like us who haven't studied in school. They provide us will opportunities to empower the women in our village.'

While the environmental education efforts are complemented with other conservation and mitigation efforts, the SLC-IT programme has inspired the community to revive its relationship with wildlife. The concepts and values of Buddhism – practised by the local communities for centuries – are at the heart of this message of revival. The local people are acknowledging the past practices and religious traditions that supported their ancestors, and are bringing back these techniques in order to live harmoniously with their environment and thrive and in the harsh terrain.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: India
Region: South Asia
Date: September 2017
Keywords: Conservation; wildlife; environmental education

THE COMMUNITY-DRIVEN REVIVAL OF BARREN LANDS FOR SUSTAINABLE LIVELIHOODS

Kapil Lal

The Integrated Livelihood Support Project has piloted an initiative in the state of Uttarakhand, in northern India, to facilitate the enhancement of farmer livelihoods by cultivating abandoned land holdings in the area. Through a participatory approach, the project has helped farmers come together to develop and maintain communal orchards, increasing their personal incomes and that of the wider community.

Cover Since the area was barren for decades, all cultural activities were difficult, and weeding and maintenance was necessary

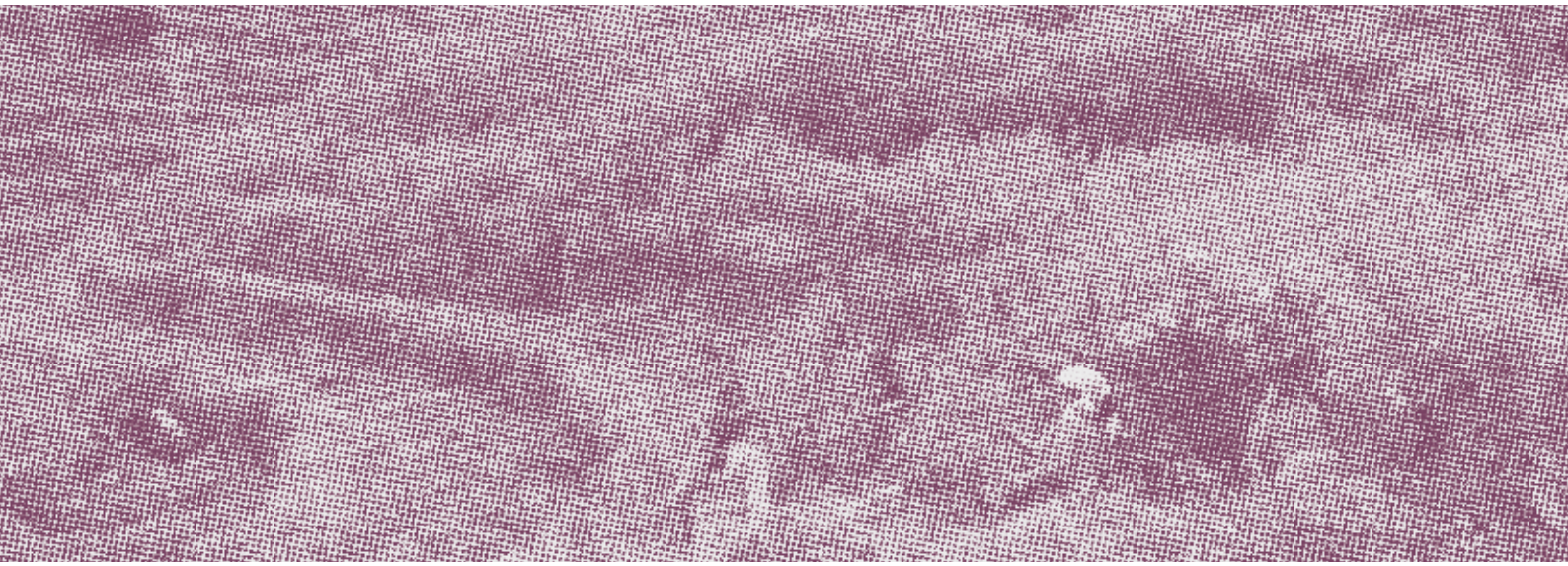
The hills of Uttarakhand are characterised by small and fragmented landholdings; the average size of a plot in the state is about 0.68 hectares, which is distributed into several patches. This is much smaller than the national average of 1.16 hectares per farmer. Communities face adverse conditions as the region is prone to natural disasters like earthquakes, flash floods and landslides.

The Integrated Livelihood Support Project (ILSP) was launched by the Government of Uttarakhand and the International Fund for Agricultural Development (IFAD) in 2012, with most activities starting in 2014. With the main objective of reducing poverty by developing the livelihoods of the villagers in 22 micro watershed areas, the ILSP project was designed as a participatory initiative involving all community members. Under the project, the community has decided and planned the development activities to be carried out by the *Gram Panchayat* (village council) of the area. A *Gram Panchayat* watershed development plan was prepared, which lists the different activities decided by the community and the budget allocated for each activity. Along with the general watershed activities, priority was given to sustainable agriculture practices, such as crop rotations, the use of cover crops or the application of an Integrated Pest Management approach – working to increase livelihood options at the producer group level. The *Gram Panchayat* of the Maroda village, in the district of Pauri, proposed the establishment of a collective pomegranate orchard in the untended and abandoned lands of the village, as a way to develop an income-generating resource. The ILSP project team facilitated this initiative by providing technical support and guidance through farmer training sessions and village meetings.

The present case study provides a review of the innovative efforts of the Maroda *Gram Panchayat* to produce a pomegranate orchard for farming, and presents the collective approach followed by the village community for regenerating the abandoned barren lands of the village, and the effect this has had on the district as a whole. For a better representation of the case, efforts have been made to describe the initiative taken by the community to enhance their livelihood situation by sustainably using their resources, and by slowing down the migration rates.

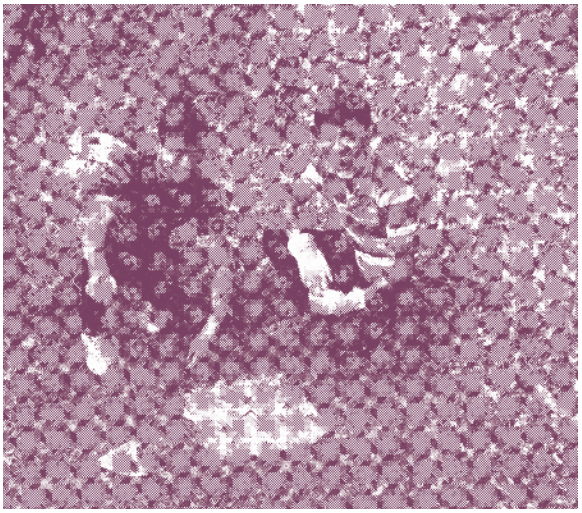
A difficult situation

The outward migration of farmers from the village is a result of the fragmentation of landholdings and also of the environmental degradation which has led to water and food scarcity. These are problems affecting the viability of agriculture and of the livestock-related livelihood options that are still the mainstay of the district's economy.



Farming families cultivate crops on limited land holdings to fulfill their family needs, which results in increased areas of fallow land in the region. (Farmers usually cultivate the lands which are nearer to their homes, leaving other holdings as fallow.) Due to large areas of land going untended, conflicts between humans and animals have arisen. The population of wild boars and monkeys has increased, and many animals stay in parts of the abandoned land, making farming more difficult. Leopards and prey alike are using the wild vegetation that has infested the vacant farmlands to provide camouflage (especially shrubs like *Lantana* and *Parthenium*), increasing the risks farmers face when venturing onto the abandoned lands.

Maroda is one of the villages in the Pabo block of the Pauri district – the block most affected by the presence of leopards and by their attacks to humans and livestock – and is classified as a high conflict zone because of this.



From fallow to orchards

The landholdings in the hilly regions of Pauri are fragmented and the entire patch of land is not available in one cluster; so there is therefore scope for collective community efforts for horticulture-based interventions, and for the promotion of a cluster-based approach for collective production and marketing. The selected area for the establishment of a collective orchard was identified, covering the barren lands of 80 farmers in the village. This made a total of 8 hectares.

This collective approach was needed to allow the village community to work together and reap the bulk harvest, and provide a social platform whereby they are able to share their day-to-day chores, whilst at the same time being more sociable. This initiative helped establish the orchard and all land preparation activities to be carried out in a collective manner, as the workload was equally divided amongst all land owners.

The steps followed were as follows:

1. **Problem identification.** After the project inception process, a series of participatory rural appraisal (PRA) exercises were carried out with the help of the community to identify different problems, issues and possibilities regarding the natural resources and agriculture. The main problems found included the scarcity of water for irrigation, the scarcity of fodder, or the need for better cultivation practices.
2. **Community mobilisation and decision making.** The head of the village council or *Gram Panchayat* for Maroda, Mr Prabhudayal Singh, took the lead in his village by outlining the main activities with all community members, starting to work in June 2015.

Above Community members clearing the site for the plantation

Bottom right Mulching around the Plants

This initiative helped establish the orchard and all land preparation activities to be carried out in a collective manner, as the workload was equally divided amongst all land owners.

3. **Identification of site and beneficiaries.** The hamlet of Bhandaru Tok comes under the Maroda *Gram Panchayat* and covers an area of 8 hectares. This particular area belongs to 80 families living in Maroda. This was the site suggested for cultivation, and then selected by the *Gram Panchayat* and the community.
4. **Layout design.** The orchard layout design was prepared by the community, facilitated by the multi-disciplinary team at ILSP. Pits were dug with a depth of 60-70 cm, with a spacing of 5 x 5 m. The planting distances recommended were 4 x 4 or 5 x 5 m.
5. **Land preparation.** The entire patch of land was covered with Lantana and Parthenium shrub species and other weed; it took 8 days to clear the entire area by the community under the leadership of the *Gram Pradhan*. Once cleared, the community made pits and planted the pomegranate saplings.
6. **Manuring.** Farmyard manure and a single super phosphate fertiliser was applied to the dugout pits. Insecticides were also used on the saplings to prevent the infestation of ants and termites.
7. **Planting material.** In August 2015, the community planted 2,000 saplings of the Bhagwa variety, high quality tissue culture plant. The ILSP team facilitated the procurement of these saplings.
7. **Mulching.** Since the area was barren for decades, all cultural activities were difficult, and weeding and maintenance was necessary. The application of mulch provided many benefits: it helped reduce the costs of weeding, while increasing and retaining soil moisture level by reducing the evapotranspiration levels. This helped plant growth, especially during the dry season.
9. **Irrigation.** Irrigation water was collected from the perennial water source located 900 m away from the project area in low density polyethylene (LDPE) tanks. With tanks at different locations across the land, this effort provided supplementary irrigation for the entire farm – with a total of 75,000 liters available. A low cost gravity-based drip irrigation system was used in the farm in order to increase efficiency.
10. **Watch and ward.** In order to support and increase the community's efforts to reap a good harvest, the project provided barbed wire fencing to prevent any possible damage caused by wild boars, monkeys and other animals.
11. **Training.** Last, and focusing on the need to develop specific skills, the team also organized an onsite pruning training course, with many villagers joining.

Above Community members using weeder to clear site

Results

The ISLP pilot project focused on the development of a collective orchard in the region. On seeing the orchard development success, farmers from neighbouring villages showed interest in developing their own collective orchards. As a result, in 2016, 26 hectares of barren land across the villages of Bidoli, Maroda, Masso Masshetha, Masso Thapliyal and Ulli were also brought under collective management.

The pilot project started with the main objective of providing a livelihood opportunity to the community. Though the first commercial harvest of the plantation will only take place later in 2018, the outcomes of the initiative are already clear. What was known as "wastelands" are now productive fields. It is also possible to say that the region has seen as shift from subsistence farming to commercial farming. Through the restoration of these barren lands, the shrubs and resilient weeds are being removed, and the hiding spaces for wild animals has reduced. The project has helped to lower the risk and occurrence of animal attacks.

And there is also a higher degree of cooperation between community members who are now working collectively. The project has seen the establishment of a livelihood collective under the name of *Molyyar Ajeevika Swayatt Sehkarita*, which was registered under the Self Reliant Cooperative Act of 2003. This is already helping farmers market their products, providing additional labour opportunities.

The organization of a Participatory Rural Appraisal exercise helped by highlighting the major challenges in the area, and helped understand the nature of the decision making processes in the area and the factors influencing this. The regular visits paid by the ILSP team helped guide the whole process.

Table 1: *Village name, area of land, and type of plantation developed for collective farming in 2016.*

Name of village	Plantation	Barren area selected for community orchard
Maroda	Pomegranate	8 ha
	Walnut	5 ha
Ulli	Walnut	5 ha
Bidoli	Pomegranate	2 ha
Masso Masshetha	Pomegranate	3 ha
Masso Thapliyal	Pomegranate	3 ha
	Total	**26 ha**

Though the first commercial harvest of the plantation will only take place later in 2018, the outcomes of the initiative are already clear.

Right *Onsite training course*

Bottom right *First year bloom in the planted pomegranate plants*

Conclusions

This initiative has shown how much is possible when community members come together and work to enhance their livelihoods. Their model of collective orchard farming on abandoned land can be an example for the entire state. Agriculture in the hilly region of Uttarakhand is mainly fragmented into small land holdings. However, through collective farming, the threats of climate risk and the non availability of labourers for farm operations can be drastically reduced.

The process has begun in earnest but the production of pomegranate and walnut is not sufficient to significantly enhance the livelihoods of a farming community. Village members are therefore also thinking of developing processing units at the *Gram Panchayat* level, which will help them obtain higher incomes. In the meantime, the new cooperative is helping them market their products – a necessary step in their path to self-sufficiency.

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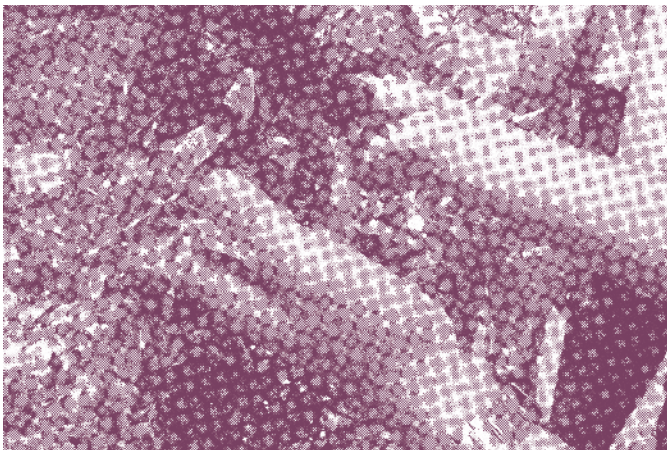

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http://experience-capitalization.cta.int

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Keywords: Cooperatives; agricultural production; commercial farming; pomegranates

2
DIGITAL TOOLS FOR DEVELOPMENT

A FISHER-FRIENDLY MOBILE APPLICATION FOR NAGAPATTINAM

Velvizhi S., Nancy Anabel and E. Thamizhazhagan

The fishing communities of Nagapattinam, in Tamil Nadu, India, are now using a mobile app which is helping them solve issues related to seafaring safety, low incomes and timeliness in reaching fish shoals. The Fisher Friend Mobile Application has been introduced to the community using a participatory approach, helping ensure the usefulness and accuracy of the technology.

Cover The Fisher Friend Mobile Application is bringing solutions to the problems frequently seen by the fisher community in India

The coastal fishing community is one of the most vulnerable groups among the poor in India. They confront several difficulties in their lives and livelihoods, including poverty, vulnerability to natural calamities, diminishing fish stocks, increasing competition with other users of coastal resources, exclusion from alternative employment opportunities, and poor access to markets and infrastructure facilities.

However, the Fisher Friend Mobile Application (FFMA) is bringing solutions to the various issues faced by the fisher community in India. FFMA provides timely and accurate seafaring information to improve the safety and incomes of fisher folk. The app has been designed to provide easy access to relevant information and knowledge related to fishing for small craft fishers. FFMA offers the following services and information to fisher folk:

- Potential fishing zone (PFZ) and GPS facility for navigating directly to fishing zones;
- Specific ocean state forecast (OSF) such as wave height, wind speed and direction;
- Danger zones in the sea, such as sunken boats, rock substrata and dead coral;
- Better market prices for various fish varieties;
- Emergency disaster alerts for e.g. tsunamis, cyclones and high waves;
- Proximity to the international border line (IBL) with Sri Lanka alerts;
- SOS facility that can help rescue fishers in critical situations;
- Calling facility – fishermen can communicate with each other and relevant government departments such as the fisheries department and the Indian Coast Guard;
- Government scheme information and daily news.

Evolution of the tool

FFMA was conceptualised and developed in 2007 using a Binary Runtime Environment for Wireless platform – an application development platform for CDMA-based mobiles – in partnership with Qualcomm. Technology advancements helped the M.S. Swaminathan Research Foundation (MSSRF) to redevelop FFMA into an Android platform in 2013, and using a participatory approach that involved various stakeholders, including the fisher community, the pilot app was launched in Tamil, Telugu and English. A total of 1,026 fishers across three states (Andhra Pradesh, Puducherry and Tamil Nadu) partook in the pilot phase to refine the app and make it more user friendly. In 2 years, the app went through 37 revisions. FFMA enables fisher folk access to timely fishing-related information; minimises their risks

whilst at sea; and maximises their economic benefits. Hence, reach of the pragmatic pan-India FFMA model was extended to benefit fisher folk across coastal India. In 2015, FFMA was made available in all the regional languages of coastal India. FFMA is also available on the Google Play store for easy access by different stakeholders. Currently, 21,000 users have accessed FFMA, all of them living in 39 districts of five coastal states: Andhra Pradesh, Kerala, Odisha, Puducherry and Tamil Nadu.

To promote the application across all the 625 coastal districts in India, evidence-based ground level experiences of implementation and learnings from where the app is already being used extensively, are required. With this in mind, the Nagapattinam district of Tamil Nadu was selected for the study because the fishers have been using the app in a sustained manner over a period of 10 years. Moreover, this district is geographically situated at the head of the Bay of Bengal, and experiences frequent extreme events associated with climate change.

The main aim of the study was to understand the implementation procedures of the project team to promote FFMA in Nagapattinam, and how it is benefitting fishers' lives and livelihoods. A total of 100 fishers from seven villages in Nagapattinam were randomly selected and provided with sampling questionnaires and interviews to collect information regarding the utility of FFMA. MSSRF staff involved in project implementation in the district were also interviewed to find out more about the promotional strategies of FFMA.

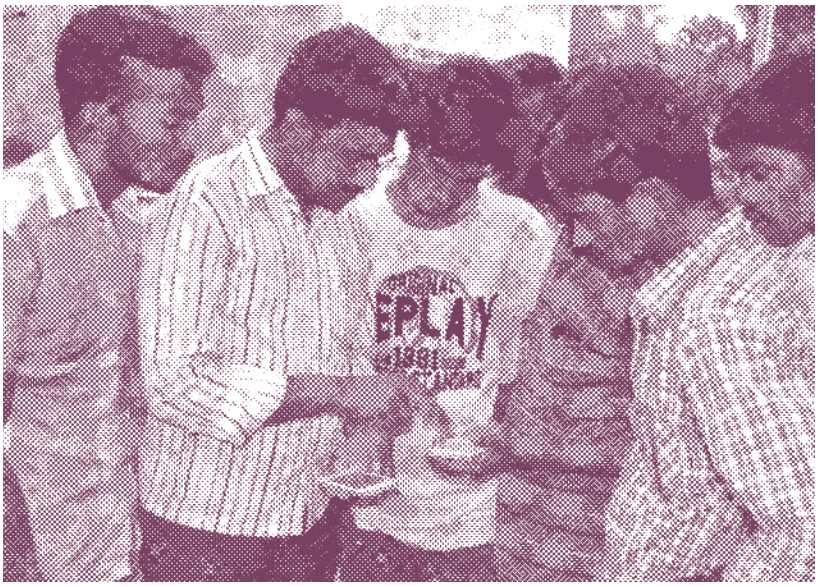
FFMA in Nagapattinam

The district of Nagapattinam is located on the Bay of Bengal coast. It covers an area of 2,715 km^2, with a total population of 1.6 million of which 78% live in the rural areas. The district has a coastline of about 190 km, but most areas are situated either below sea level or at not more than 5 m above sea level. Therefore, there is a high probability of seawater intrusion and disasters such as cyclones, floods, drought, and tsunamis.

Nagapattinam was the most affected district of India in the 2004 Indian Ocean tsunami, where over 7,000 lives were lost and approximately 40,000 houses were destroyed. Therefore, the genesis of FFMA stems from a post-tsunami rehabilitation context. In 2007, FFMA was piloted in three districts of Tamil Nadu, including Nagapattinam. Initially, implementation benefitted from the 'village knowledge centre' (VKC) already operating with the support of MSSRF. Village level partners supported the implementation process as village heads, traditional *panchayat* (village council) leaders and volunteers, and other key stakeholders in the villages were sensitised about the application. Similar orientation was given to stakeholders in the other two districts. During the pilot phase, around 500 fishers from Cuddalore, Kanyakumari and Nagapattinam took part in the process; they provided critical feedback on FFMA in terms of technology, content and accuracy of data.

A multi-level capacity building and awareness raising strategy is now being rolled out by FFMA's

Up to 60% of those who downloaded the app are using it on a regular basis for OSF and PFZ information, disaster alerts and weather forecasts.



Above *Out of 100 respondents, 64% stated that the FFMA information helps them reduce risks to themselves and to their livelihood assets*

implementation team to increase visibility of the app, including village level meetings, one-to-one interactions, promoting fishers as FFMA ambassadors, and with social media campaigns. More than 8,223 fishers have been trained in Nagapattinam on FFMA and its features; as a result, 3,593 fishers in Nagapattinam are using the app for getting day-to-day fishing-related early warnings and other relevant information.

Up to 60% of those who downloaded the app are using it on a regular basis for OSF and PFZ information, disaster alerts and weather forecasts. Around 25% fishers stated that they are also using FFMA regularly for navigating the fishing zones. Ten per cent of fishers expressed that FFMA has helped them to mark traditional fishing grounds and to store the latitude/longitude positions. Some respondents (5%) stated that they are using the application for government scheme information and to access daily news.

The overall screen view of FFMA was 1,162,933 across the three districts, of which, Nagapattinam district accounted for 411,360, or 35% of the project total screen views. This data was collected via the inbuilt Google Analytics tool within the app. When the reasons for such a high rate of adoption were further explored, it was found that 80% of the FFMA users in Nagapattinam are small-scale fishers and they don't have any other equipment/tools other than mobiles, so they rely on this technology for their fishing information

Benefits to the fishers

Fishers have used FFMA services for planning their fishing trips, identifying fish shoals, navigating fishing grounds, avoiding danger zones, and also for avoiding crossing the IBL with Sri Lanka. It was observed that 71% of the fisher folk who used FFMA were motorised fishers using small craft for fishing up to 50 km from the shore, 27% were mechanised boat operators, and the remaining 2% were from other sectors like government officials, non-governmental organisations and other private agencies who have been involved in fishing and fishing-related developmental interventions.

Almost all respondents using FFMA unanimously agreed that the application plays a very critical role in their lives. Data from the study shows that 39% of respondents reported to have economically benefited from using the app due to increased fish catch, reduced diesel consumption and by navigating the fishing zone directly. Around 44% of respondents expressed that their livelihood assets, such as boats and nets were kept safe due to early warning alerts. Some respondents (5%) also reported that the app saved their lives thanks to the timely information and disaster alerts on high waves and cyclones.

"I have used the app"

I am from Nagore Pattinacherry fishing village near Nagore in Nagapattinam district. On 18 November 2016 at around 3 o'clock in the morning, myself and 3 others went fishing 35 km off the coast. Suddenly the engine cut out and we were stuck in the middle of the sea. We became anxious as there was nobody around and there were no landmarks close by to indicate to other fishers where we were. However, one of my fellow fishers told me about the FFMA GPS facility to pinpoint my boat's location. Using the app, I was able to inform my friends of our location and they were able to come and rescue us.

Mr Murugan, fisherman, Nagore Pattinacherry

I did not know how to use GPS prior to installing the app, but now I am well versed in it. On 9 February 2016, a friend of mine gave me the latitude and longitude points of a particular fishing zone. After reaching the point, I hauled my net for 3-5 h and caught 100 kg of seer fish. I sold my catch for Rs. 38,000 (€500). When I went to Nagapattinam during the same week, I received the information for a rocky zone from my friend who had saved it in his app and navigated to the exact location. I got 50 seer fish and sold them for Rs. 21,000 (€275). Thus, within a week I got a net profit of Rs 59,000 (€770). From then on, I have used the app to mark the places where the fish shoals are and also where the rocky areas are.

Singaravelu Mohanraj, motorised boat owner, Poompuhar

Out of 100 respondents, 64% stated that the FFMA information helps them reduce risks to themselves and to their livelihood assets. In terms of economic benefits, fisher folk who received PFZ information through the FFMA application benefited both directly and indirectly. Direct benefits included increases in catch as well as net income. Due to increased fish harvest, there has been a rise in the wages of the fishing crew as well. Some respondents have been using their profits to pay back bank loans taken out to purchase boat assets. The fishermen also pointed out that with the advisories, they are able to decide on how much diesel/ice to take on fishing trips.

At the same time, it is quite apparent from our interactions with the respondents that their expenditure on fishing inputs, particularly diesel, has been considerably reduced as a result of using FFMA. A major gain is that by using the PFZ, GPS and 'My Tracker' facilities of the app, fishers are decreasing their diesel consumption and reaching their fishing destinations on time. The boat drivers expressed that reaching the location of fish shoals has become less complicated, and the reduction in diesel expenditure is, in itself, a major economic gain.

Major learnings

The project implementation team in Nagapattinam learnt a lot while implementing the project, which will be very helpful for further improving and scaling FFMA. The project has shown that

- fishers are receptive to adopt technology if it is simple, useful, cost-effective and addresses core issues;
- involving end beneficiaries as key stakeholders throughout the project – from planning, implementation and refinement of the application – is one of the keys to success;
- regular meetings organised with partners at the community and government levels help the project team to understand the performance of the application and get suggestions for improving strategies for promotion, technology design and accuracy of content;
- stakeholder consultation at the community, village and district levels, and periodical assessment with fishers through interviews, focus group discussions and case studies, helps collate the qualitative changes in risk reduction and income enhancement; and that
- connectivity at sea restricts fishers' use of the application. This will be one of the major areas for future policy advocacy and collaborative research.

Years of capacity building by MSSRF, and iteratively incorporating community feedback into the technology, have led to a wealth of learning in overcoming bottlenecks and in penetrating the community with last-mile connectivity. As a result, MSSRF has a ready package of FFMA and its implementation strategy, which can be replicated within a year, in any location.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: India
Region: South Asia
Date: September 2017
Keywords: Mobile apps; ICTs; fisherfolk; fishing; risk prevention

THE INSTITUTIONALIZATION OF AN ONLINE REPORTING SYSTEM

Karma Wangmo

To improve progress reporting within the Commercial Agriculture and Resilient Livelihoods Enhancement Programme (CARLEP), which works to enhance market engagement and climate resilience of farmers in Bhutan, the project introduced a standardised online reporting system. The system is helping to reduce the workload of the field and implementation staff, as well as helping increase the transparency of the programme.

The Commercial Agriculture and Resilient Livelihoods Enhancement Programme (CARLEP) is the seventh project funded by the International Fund for Agricultural Development (IFAD) in Bhutan, under the Ministry of Agriculture and Forestry. This seven-year programme (2015-2022) focuses on marketing and on climate-resilient farming practices in the six eastern *dzongkhags* (districts) of the country, namely Lhuentse, Mongar, Pemagatshel, Samdrupjongkhar, Trashigang and Trashi Yangtse.

CARLEP is built on the lessons learned and the achievements of the projects and programmes implemented in the past in Bhutan, where one of the most important lessons has been the need to improve the reporting systems to document project progress. The conventional method of reporting annual progress – whereby implementers had to manually record the progress data and submit a document to the Office of Programme Management (OPM) either by post, fax or e-mail – was tedious and time-consuming, and often created problems for the programme staff during the compilation of a report because this was not uniform.

As a potential remedy, the OPM of CARLEP, working together with the Project Support Officer (PSO), developed an online reporting system using a Google sheet to produce an annual progress report (APR). This online reporting system was formally institutionalised in September 2016 among the different institutions which are part of CARLEP: the livestock and agriculture sector of the six eastern districts, the Agriculture and Research Development Center (ARDC), the Regional Livestock Development Center (RLDC) and the Regional Agricultural and Marketing Cooperative Office (RAMCO). Since then, it has been used to avoid the loss of information, save time in reporting, to build a robust knowledge repository and to have year-round access to data and information for documentation.

Before the introduction of the Google sheet system, the absence of an effective data repository meant some progress data were not recorded at all, affecting the overall performance of the programme because many lessons and experiences were not captured or remained undocumented.

An online spreadsheet

The Google sheet is an online spreadsheet that enables authorised users to write, edit, comment, view, share and protect the intended files. The different activities of the implementing partners are comprehensively inserted into the sheet. The sheet can be shared and edited online, which is ideal for use by multiple agencies who can work on a single file at the same time, from any connected device. Other advantages include the possibility of

Cover Participants attending a training workshop

Above Training participants, and collecting their feedback and suggestions

- having eligible users who can enter or remove data;
- editing online files in real-time;
- viewing progress data of other agencies at any time;
- a timely update of the progress reports;
- working offline (viewing, editing and entering data); and
- creating GPS-based data maps.

Following the development of the Google sheet in August 2016, the OPM visited some of the implementing agencies to train them on its use, and to incorporate their feedbacks and suggestions. A round of hands-on training and operation of the system was also given to the sector heads of the six programme *dzongkhags*, and to representatives of the three central agencies (ARDC, RLDC and RAMCO) in December 2016.

However, it was found that the implementing agencies were still facing technical difficulties, such as the inability to open files, and there was a certain degree of confusion when operating the system due to a lack of more adequate information. Therefore, an additional practical session was organised in July 2017 for sector heads (the *dzongkhag* livestock officers [DLOs] and the *dzongkhag* agriculture officers [DAOs]) and their representatives (the assistant *dzongkhag* livestock and agriculture officers), and for the focal person from the three central agencies. Furthermore, a step-by-step guide to use the online sheet was also made available on CARLEP's website: http://www.carlep.gov.bt/?page_id=182. In order to further validate the system, IFAD reviewed it in March 2017, and their feedback and suggestions were also incorporated.

A few challenges and limitations

No major challenges were faced during the implementation of the online reporting system, but there were some technical limitations, such as the poor internet connectivity experienced by several of the implementing partners. Listed below are some of the minor issues faced:

1. The majority of CARLEP implementers are field staff who spend more time in the field than working on reports, therefore familiarising them with the online system took longer.
2. The implementing partners are not only responsible for the programme, but also manage other similar programmes and activities for the ministry. The sector heads, especially the DLOs and DAOs, have different administrative responsibilities, and therefore less time to work on progress reports.

Figure 1: *Comprehensive view of the conventional Progress Reporting System*

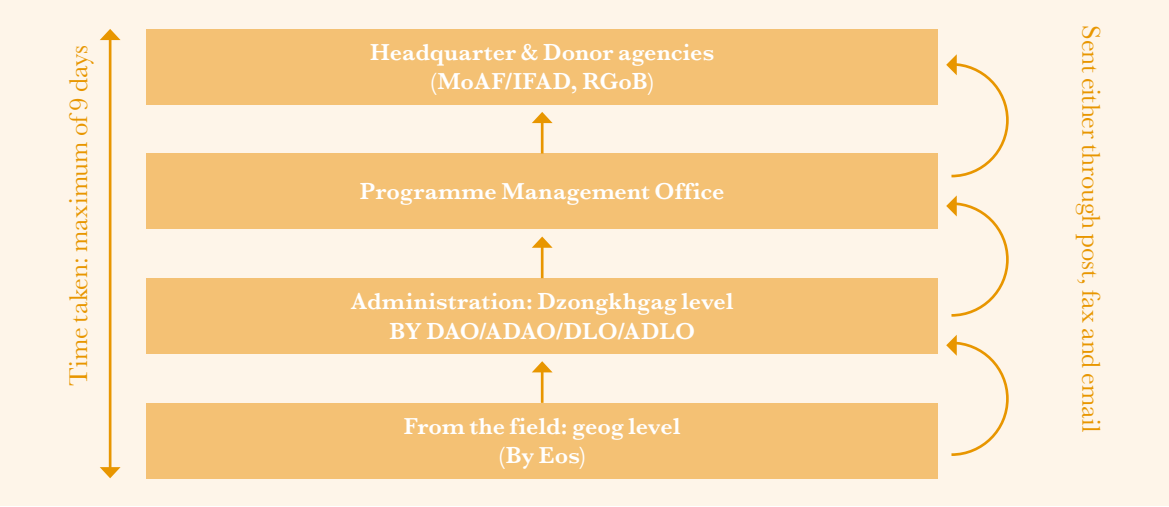
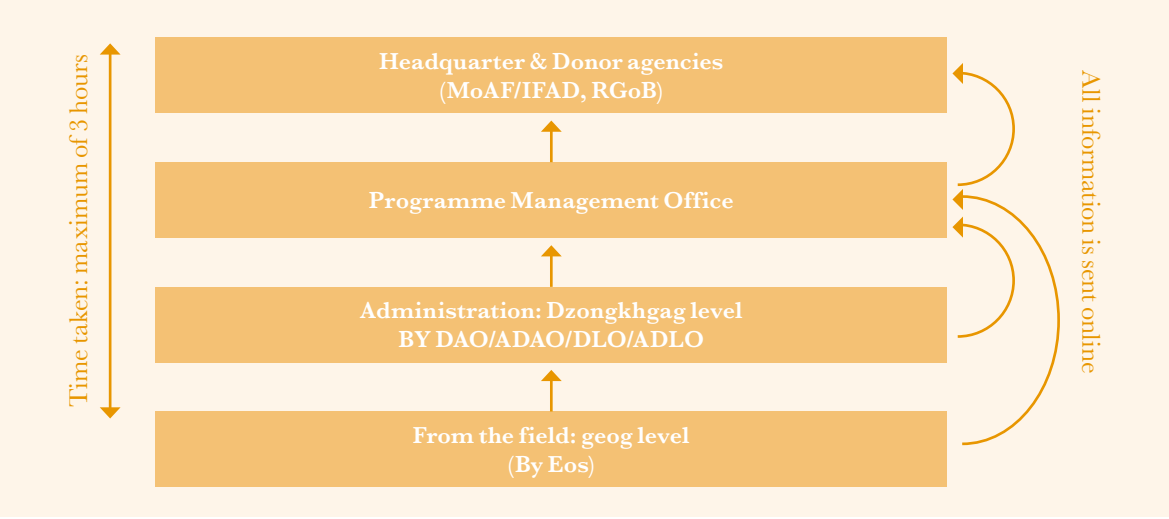


Figure 2: *Comprehensive view of the current method: Online Reporting System*



3. The online data can only be updated using an internet-connected device. Unfortunately, the internet connection is poor in most of the programme areas.

4. Using the online progress reporting system, implementers can only enter numerical data. Narrative data like the description of a site selected for crop intensification, the starting date of a specific activity, and the impacts and benefits, are not accessible using the online system.

The technical assistance and guidance provided by the OPM on the use of the online reporting system helped all implementers understand how the system works. The focal persons from the implementing agencies who are responsible for the reporting are now familiar with the format. In the case of emerging technical issues within the system, the OPM and PSO ensure the problems are resolved immediately.

To avoid putting extra pressure on the sector heads at the end of the financial year, the OPM recommends they update the data on the same day each activity is completed. Additionally, to have consistency in reporting, the progress report for CARLEP is done on a quarterly basis. The progress reports will be done four times a year by all implementing agencies to improve accessibility to the latest updated figures, and for the creation of knowledge products such as information fact sheets, impact analysis documents and case studies.

To get the narrative report, the monitoring and evaluation (M&E) section of the OPM continuously follows-up on whatever data has been reported. The CARLEP website (www.carlep.gov.bt) presents the

The work burden for staff, both at the implementation level and the programme management level, has been greatly reduced with the institutionalisation of the online report system.

narrative data on activities implemented in the field. The event coverage and news for most of the activities is uploaded to the website by the knowledge management (KM) section of the OPM, in collaboration with the respective implementers.

There is nothing the OPM can do about the poor internet connectivity except to request that implementers update progress whenever possible. The issue of circulating progress reports, and especially narrative reports, has largely been solved through the creation of an instant messaging app by CARLEP's implementing agencies – this works even with limited or weak network coverage. Implementers use the Wechat group to share information about all programme activities and through the thread, the KM team of the OPM collects the relevant and appropriate information.

Last, an important thing to mention is that viewing, editing and entering data in the Google sheets is possible offline, but updates will only register when the computer is connected to the internet. The device also has to have the Google Drive app installed to update the progress report offline.

Impacts of the online reporting system

The 2016-17 annual progress reporting was done using the new system, with the OPM compiling the data to produce a set of APRs. Both the implementers and the OPM consider the online reporting system to be an effective means of reporting, especially in terms of the following parameters:

Reduced time in reporting

In previous projects, when reports had to reach the OPM in hard copies (post, fax), it would take at least two days for the preparation (the printing and binding of all documents), one day for the report to reach the post office, and a minimum of three days to be posted to the OPM. But with the current method, the report is instantly received by the office. Similarly, if there were any errors or omissions in the data that had to be rectified, this again would take a minimum of 3 days to be corrected, whereas with the online reporting system, corrections can be made immediately. In conclusion, an average of 9 working days was required with the old method, but with the online reporting system, it takes an average of 12 hours for reports to reach the OPM.

Reduced work burden for staff

The work burden for staff, both at the implementation level and the programme management level, has been greatly reduced with the institutionalisation of the online report system. Field staff no longer have to compile, print and send annual data to the OPM, they just enter it online. Both the field and the OPM staff no longer have to travel to post offices to send their reports. With the standardisation of report formats and ease of comparison, staff members can

more easily discuss programme data/progress. OPM staff no longer need to manually compile information from hand written reports as the information is accessible online.

Increased accuracy

Apart from human errors when inputting data, the information accuracy of the online reporting system can be ensured because it permits the cross-checking of existing data. The data to be entered is also mostly specified by the units already added to the document, so it is easier to trace mistakes. Moreover, the information can be compared between implementing agencies, enabling them to take up the necessary actions, such as tracing of field work if, for instance, the data on agriculture activities is exceptionally high or low in comparison to that of other *dzongkhags*.

Increased transparency and visibility of the programme

Since the details of each activity, including the targets, fund use, beneficiaries reached (male/female), and outputs are online, the accountability, transparency and visibility aspects of the programme have increased. The system can be used as an online data repository to extract or refer to any information needed pertaining to the programme's progress, and can be shared with visiting donors and project partners.

Lessons learned

CARLEP is completing the second year of its seven-year implementation period, and the introduction and institutionalisation of an online reporting system is a big achievement as it helps develop a robust and almost real-time M&E framework. This will also prove to be a good source of knowledge for future programmes.

The online reporting system is cost-effective, efficient, user-friendly and replicable. Anybody who owns a Google e-mail account can operate the system from any internet-connected device. Except for the training of staff on how to use it, no monetary investment was incurred during the set-up of the system.

Online reporting is very efficient for data transferral and information sharing. There is limited scope for loss of data; errors can easily be traced and information can be shared quickly. This system is therefore convenient and efficient for performance-based funding programmes like CARLEP. Programme progress can easily be reviewed, showing whether a project has achieved its targets and showing if funds have been used, thereby giving the donor agencies a very clear image of the status of the programme. Moreover, the online reporting system is easily replicable. The agriculture sector of Trashigang has already started running a similar tool.

However, to obtain the full benefits of institutionalising this approach, there is a need for proper internet connectivity and that all staff are familiar with its application. Therefore, any new initiative needs to be communicated to all those who are part of the programme implementers, and the field staff need to be familiarised with it.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: Bhutan
Region: South Asia
Date: September 2017
Keywords: Monitoring & evaluation; ICTs; online tools; project management

A GIS-BASED INDEX TOOL FOR THE SELECTION OF PONDS FOR FISHERIES

Chitra Khanna

In Central India, a GIS-based geo-hydrological composite index tool has been developed to enable the selection of suitable perennial ponds for fisheries. The tool also allows users to take a comprehensive view of a district and make decisions for natural resource management interventions.

Fisheries and aquaculture provide livelihoods for millions of people across the world. In 2014, production from inland water capture fisheries was 160 million tonnes globally, and constituted 12.74% of total capture production. India is the third largest producer of inland fish, and the second largest producer of farmed fish. In India, nearly 65% of total fish production (presently at around 10 million t) comes from the inland sector.

Madhya Pradesh is situated in the central region of India, and has a total river length of 17,000 km, and almost 4 million hectares of water area in reservoirs. Of the available reservoir area, 98% has been brought under fisheries, including 0.64 million hectares of rural ponds. Socially, fisheries have been the traditional occupation of persons belonging to scheduled caste groups such as the Bhoi, Dheemar, Kahar, Kevat, Mallah, Nishad and Raikwar. These groups live across different districts of Madhya Pradesh and are skilled in deep water fisheries.

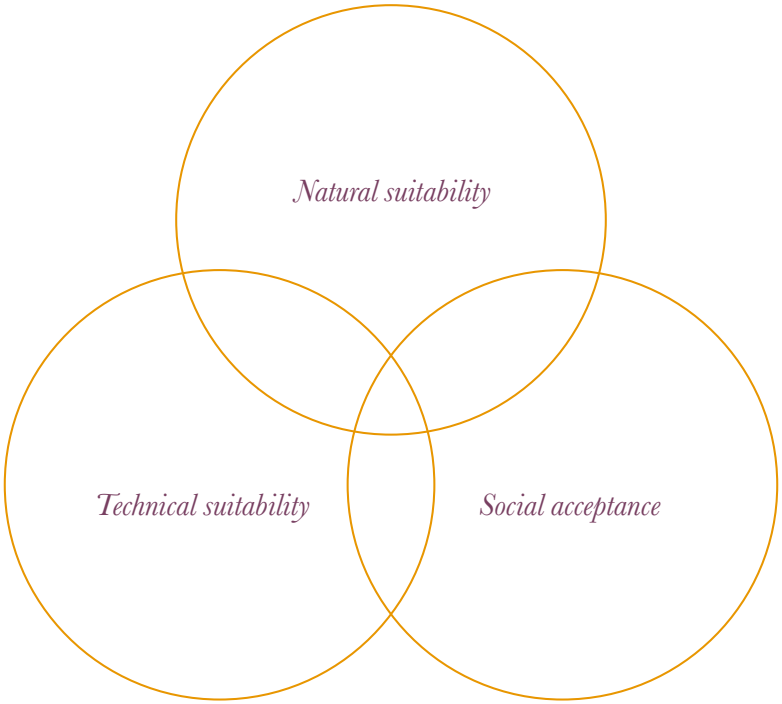
Tribal fishers have traditionally conducted capture fisheries, hunting fish by using bows and arrows, laying down fish traps and casting nets. The fisheries of tribal fishers were mostly in shallow waters and were developed for self-consumption. However, with the support of the government, these fishers have been organised and trained in aquaculture-related practices. This has led to the development of deeper pond fisheries by the tribal community. Both scheduled caste and scheduled tribal communities practice fishing, but if an area is classified as 'schedule 5', it comes under the Panchayat Extension to Scheduled Areas Act, under which the tribes have first right to the resources.

In Madhya Pradesh, the selection of ponds for fisheries is not by design, but is incidental to their existence. At present, the rural ponds for fisheries are selected on the basis of their ability to retain water for different periods of time, and are classified as seasonal or perennial ponds by the Fisheries Department of the government. Once a pond is selected by the local governing body, it is leased out to either cooperatives, self-help groups (community groups that function to address social issues or improve livelihood activities) or fisher groups.

The intervention

Supported by the United Nations Adaptation Fund Board and the National Bank for Agriculture and Rural Development, TAAL is implementing the project called *Building Adaptive Capacities of Small Inland Fishermen Community for Climate Resilience and Livelihoods Security in Madhya Pradesh*. The aim of this project is to select ponds that are naturally and technically suitable, as well as socially accepted to be utilised as fisheries, through the following steps:

Cover A total of 65% of the fish production in India comes from the inland sector



Right *The Girala pond*

1. A natural suitability analysis through the development of a GIS-based composite index tool for hydro-geological assessment (described in the subsequent sections);
2. A technical suitability analysis via visits to the pond sites and ground-truthing; and
3. Social acceptance analyses of the local community to work at the fisheries via two separate social assessments.

The three districts comprising the project area, Alirajpur, Dhar and Jhabua, are predominantly rural in composition, with more than 80% of the population residing in the countryside. The districts are mostly inhabited by persons belonging to scheduled tribes, with the Bhils and Bhilalas as the major tribal groups.

There, ponds under 10 hectares were chosen as they fall under the jurisdiction of the *Gram Panchayat* – the village governing body which is the smallest unit of local governance in India. The ponds selected were modified to increase their water retention capacity and to reduce the incoming silt load, i.e. the inlets and outlets were repaired. Structures were also built to aid fish diversity and fish handling, such as a fish pass which prevents the outflow of fish through the waste weir, and a fisherman's platform to place equipment or the fish catch.

Based on the vulnerability assessment in the State Action Plan for Climate Change, TAAL developed a proposal for the Jhabua hills agro climatic zone. Parts of the Alirajpur, Dhar and Jhabua districts fall in this zone. Dhar has 1,474 villages, Jhabua has 818 villages and Alirajpur has 547 villages. A total of ten administrative blocks, covering 960 villages, were considered in the project proposal.

There was a need to develop a methodology that would enable an unbiased selection of the ponds most suitable for fisheries in the selected district blocks. A list of ponds was taken from the water resource department, the fisheries department and from the block level administration of the local government. The list ran into many pages and the challenge was to find the ponds that were both technically suitable as well as still physically existant.

The tool and the results

A hydro-geological assessment is a necessity before any pond is constructed. Since the project was working on existing ponds constructed by different government departments, it was safe to assume that the pond sites were naturally suitable for water impounding. However, it was important to establish that the pond sites were suitable for fisheries, and that the natural features had the potential to support the pond's perenniality – a desirable feature for fisheries.

Maps were sourced from the national government. These were scanned and updated using GPS technology to determine the coordinates of the most important geographical features. The maps were referenced to village boundaries, land use and existing water bodies. GIS was used for overlaying map information onto one document. Different meetings then took place between the hydro-geologists to decide the weight of importance of the technical parameters used to determine the hydro-geological suitability of the ponds. The different parameters taken for the assessment included the drainage density and the lithology. The most favourable condition for each

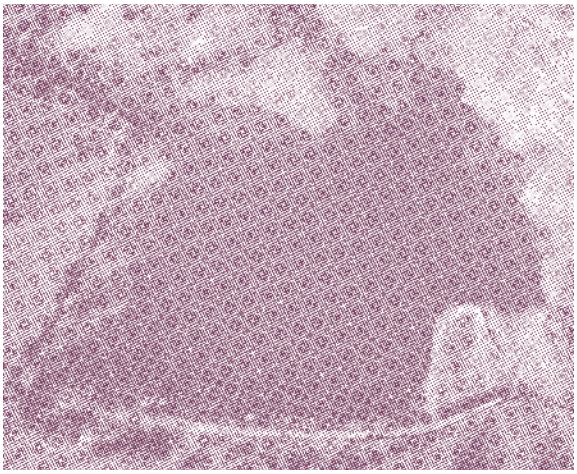


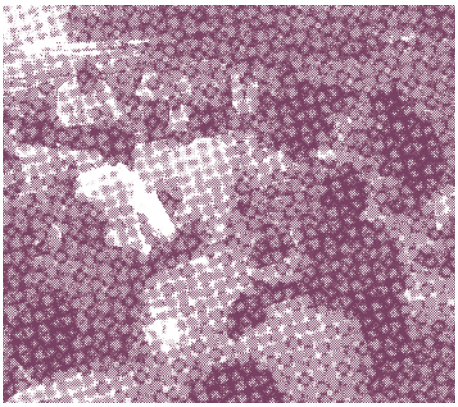
Table 1: *Weights given to soil parameters*

Soil Type	Clayey	Clayey calcareous	Clayey and loamy	Loamy calcareous	Loamy
	Valleys, plains and plateaus	Valleys, undulating plains, undulating and interveinal plateau, mound	Plateau and hill ranges	Plain land and undulating plains	Valleys, plateaus, hills, escarpments
Priority	1	2	3	4	5

Table 2: *Water body priority, Jhabua district*

Village name	Hira-khadan	Nawa-pada	Go-palpura	An-tarveliya	Khedi	Kalyan-pura	Parwat	Junwan-iya
Drainage density	2	1	2	1	2	2	1	1
Hydrology	2	3	3	3	3	3	3	3
Lithology	1	2	2	3	2	2	3	1
GeoMorphology	1	4	1	4	4	4	2	2
Land use	2	2	2	2	4	4	2	2
Pereniality	2	1	1	2	1	1	1	2
Slope	3	2	2	2	2	3	2	2
Soil	1	1	1	5	5	5	1	1
Area (ha)	7.385	0.609	1.606	5.982	2.655	1.398	6.628	11.513
Priority sum	14	16	14	22	23	24	15	14
Priority value	1.75	2.00	1.75	2.75	2.88	3.00	1.88	1.75
Priority	1	2	1	3	4	4	2	1

The tool provides a means of selecting perennial ponds for fishery activities from a list that may be based on anecdotal evidence.



Above *An important step in the process was the identification of the technical parameters and the calculation of the priority rankings*

parameter was given priority score of 1; the least favourable received a score of 5. Soil was one such parameter to be analysed and the priority score results for the various soil types are highlighted in the table. As an example, the next table shows the overall calculations for ponds in Jhabua district.

The GIS analysis and the thematic analysis of each of the technical parameters identified above provided the project an inventory of 429 suitable ponds from the 10 blocks. Out of these, 60 were selected for the project.

Selecting 60 ponds became easier once the priority rankings had been calculated. The hydro-geological composite index tool was also efficient in providing accurate GPS locations for each pond. This information was useful in identifying and locating potential ponds more rapidly, and as a result, the project visited more than 150 ponds in the first year. Eighty ponds out of the 150 were selected for ground truthing and technical assessment. The remaining ponds were not selected for ground thruthing due to reasons including high irrigation, serious damage to bunds, leakage/seepage, or also because of social issues.

The methodology and the results were presented to the technical advisory group made up of representatives of the Central Institute of Freshwater Aquaculture, the Central Institute of Agriculture Engineering, the Indian Institute of Soil Science, and the Water and Land Management Institute. Extensive discussions took place on the methodology of the exercise and this was approved by the group.

The exercise resulted in the development of the tool: GIS-based geo-hydrological composite index tool for selection of ponds for fisheries.

What can this tool do?

The tool provides a means of selecting perennial ponds for fishery activities from a list that may be based on anecdotal evidence. There was no strategic plan at the district level, and no priority list of ponds at the block or district levels. The tool developed allows the fisheries department to take a comprehensive view of the district and make decisions for different categories of ponds.

This tool can give:

a. Spatial locations of water bodies within a particular area;

b. The number of ponds in that particular area;

c. The water area of the ponds; and

d. The technical details for the different parameters of the entire geographical unit, including the drainage density, landforms, structural information, the geology, groundwater information, the soil, slope and the perenniality.

Table 3: *Inventory of ponds*

SN	District	Block	Number of ponds	Number of ponds less than 10 ha	Priority			
					1	**2**	**3**	**4**
1	**Dhar**	Manavar	53	31	0	1	17	13
		Gandhwani	43	28	0	2	12	11
		Bagh	38	30	0	0	19	9
		Kukshi	12	08	0	0	5	3
2	**Alirajpur**	Udaygarh	48	35	19	0	08	0
		Alirajpur	55	38	21	0	11	0
		Jobat	34	23	12	0	9	0
3	**Jhabua**	Jhabua	73	64	24	0	25	0
		Ranapur	113	103	55	0	32	0
		Rama	77	69	29	0	25	0
			546	**429**				

The tool has been accurate in terms of identifying the technical features of the site, but ground truthing, or the physical verification of the site, is still recommended to verify the present status and use of the resource. The tool saves time in identifying and shortlisting water bodies, and thus allows ground truthing in specific locations, saving time and costs. It can be replicated, but doing so will require:

a. A clear defined objective;

b. The acquirement of legal maps;

c. Licensed ARC GIS software;

d. Hydro-geology knowledge to update the geographical features using the software;

e. Knowledge of GPS to update GIS databases.

Maps have been made for the eight technical parameters and referenced to the present land use and village boundaries. Each of the maps can be used for multiple purposes. For example, the groundwater maps along with the drainage density maps can be used for planning water use, specifically drinking water in districts like Dhar, where the presence of fluoride in ground water is an issue.

This exercise is a robust planning tool for natural resource management interventions. It helped the project identify the maximum number of ponds in a 'Priority 3 category', which means that the area is not the best sites for ponds due to its geology. Yet there are pockets of perenniality, which need to be optimised to meet the needs of the people and to plan for those who live in isolated or more difficult regions.

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http://experience-capitalization.cta.int

Country: India
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3
RURAL LIVELIHOODS

PRODUCER GROUPS PROMOTE GOAT REARING IN UTTARAKHAND

Anil Maikhuri

Smallholder farmers in northern India are turning to goat rearing to improve their incomes and food security. The Integrated Livelihood Support Project is providing training to these farmers on improved goat feeding and vaccination practices, increasing goat prices and contributing to the local economy.

Cover Producer groups are supported with vaccinations and health care

A joint initiative of the Government of Uttarakhand and the International Fund for Agriculture Development, the Integrated Livelihood Support Project (ILSP) is working in 11 hill districts in the state of Uttarakhand, northern India, to enable rural households to take up sustainable livelihood opportunities integrated with the wider economy. These are areas where villagers need an alternative livelihood option to ensure their food security. Since April 2016, ILSP has been working with 3,242 households from 203 villages in the Garud block of the Bageshwar district. Based on common production activities, the project has facilitated the formation of 402 producer groups (PGs) and 125 vulnerable producer groups (VPGs) in 48 villages, covering 1,012 households. Six clusters have been identified and six cooperatives have been registered under the State Self Reliant Cooperative Act of 2003.

In Bageshwar, as in a large part of Uttarakhand, goats are mainly reared for meat production. In the rural areas, large numbers of male goats are kept for religious sacrifices (e.g. Navaratri) and are slaughtered locally, and their price can be very high. The key constraints to goat production include their nutrition, as villagers rarely provide food supplements. Intensification is difficult as farmers prefer to graze their animals, and if feed supplements are used, rearers are then not able to compete in the market. At the same time, selective breeding is a long term process and the investments required are high.

Our intervention

The project encourages the formation of producer groups, and supports them with goat vaccinations and health care, breeding techniques, and by promoting fodder cultivation and stall feeding. The PGs and VPGs are formed by between eight to ten members, with composition depending on the geographical proximity of the households, the affinity amongst group members to work together, and the common interest of all members to take up similar activities. The objective has been to see the PGs and VPGs become vehicles for the delivery of services such as health care to enhance production activities. All PG members receive INR 8,000 (~€100) from ILSP (this includes a 10% contribution from beneficiaries), and VPGs receive an additional INR 1,600 (€20) as seed money for their food security improvement plan (FSIP) – the core planning document for all groups.

A cluster level livelihood collective (or LC, a self-reliant cooperative) supports the PGs with inputs and also by linking them to the market. Each LC is formed by approximately 50 to 70 PGs and/or VPGs. The location of the LCs depends on the ease of access for PGs and VPGs, the market linkage potential and the

A president, secretary and treasurer have been elected for every PG and training on governance issues is provided to every group.

cluster formation. ILSP provides each LC with grant funds via technical agencies (TAs – the project partner NGOs). The Garud block has six LCs.

ILSP is supporting India's Goat Trust under its innovation linkages programme to promote goat farming in the Bageshwar and Dehradun districts. The Goat Trust also provides support to 84 PGs in terms of breeding and vaccinations. They have developed community level para-professionals called *Pashu Sakhi* (or "friends of animals") at the village level and cluster level, for the delivery of timely inputs to ensure year round production.

In April 2015, ILSP began providing financial support to the PGs, releasing a first instalment of INR 3,600 (€47), plus a 10% community contribution, to the PG bank account on the condition that members repay the amount within a time frame set by the members themselves, and that the funds are used for the next crop cycle. Next is the release of a second instalment of INR 3,600 (+ 10% community contribution) to the LCs to buy agriculture inputs and sell the same to the PGs. The second instalment of PG support money is treated as share capital for members, and a payment of dividend system is put in place every year. The PGs are informed by ILSP that the money they receive is not for one time use; it has to be utilised as a revolving fund. They are also told that the money is not one individual's money but belongs to the PG, which has its own rules and guidelines that need to be followed by all members.

But the project also focused on the need to strengthen these groups, focusing on

- **Monthly meetings:** Every month, all PGs have a meeting to document their proceedings. Core discussions are held on production, marketing and LC activities, and savings and loan repayment;
- **Governance structures:** A president, secretary and treasurer have been elected for every PG and training on governance issues is provided to every group. Regular monitoring and support is provided by the field staff;

Below An important part of the project is the provision of technical knowledge

Above *One of the project-trained Pashu Sakhis*

- **Savings:** Field workers agree with each PG member on a certain amount that has to be paid into the PG account each month to encourage the groups to save. The amount agreed upon varies from between INR 50 (€0.6) and INR 300 (€4). It is mandatory that all groups open a bank account, where they keep all the money they receive from the project and the money they collect as monthly savings. Project support has to be spent on production activities specified in the group's FSIP, but the money accrued on the group's savings can be lent to group members for their other needs. In the Garud block, the 402 PGs and 125 VPGs have so far saved INR 6,252,791 (€81,730);
- **Documentation:** Every PG maintains two registers, one for monthly meeting proceedings and the other for incomes and expenditures. The data from these registers is monitored by the project.

Under their own FSIP, all groups have to plan their goat rearing activities for the year, including choice of breed, fodder practices, health and resource management, and business marketing and governance. ILSP has drafted an FSIP format and provided training to all TA field staff who help PGs plan their annual production activities. Information regarding the expected annual production, turnover and anticipated challenges are also noted in the FSIP document.

The next level of planning above FSIP is the AUP, or the Agriculture Up-Scaling Plan. This activity is carried out by the LCs who consolidate the FSIP information developed at the PG level. This covers a three-year period.

And equally important is the provision of technical knowledge. In the villages where the Goat Trust is operating, a rigorous analysis of the feed, health and kidding practices has been carried out to identify the gaps in each sector, share the latest knowledge, and convince farmers to apply it. Preventive animal health practices like vaccination and de-worming of goats, as well as the use of local herbs to treat general ailments, have been explained to the farmers. A system of limited grazing and alternative home-based complementary feeding – especially for pregnant goats and kids – was developed and shared with all participants. The Goat Trust has trained village-based women as *Pashu Sakhis* and as *pashu* nurses, and it has also trained men and women as livelihood nurses and as cluster level coordinators to support the implementation of best practices. Those trained provide animal first aid services, monitor all farming activities, and serve as a link to the government insurance schemes.

Above Training session

Challenges and results

Due to the cultural and religious links to goats, as mentioned above, goat farming was not a popular farming activity in the rural areas of the study sites. The families rearing goats as part of the project are mostly from scheduled castes (the historically disadvantaged people), and these activities have gradually isolated them even more from their communities.

At the same time, and apart from the religious and social factors, the local market for both forward and backward linkages within the goat value chain was not available in the project area. Most of the households that adopted goat farming as their primary production activity were below the poverty line, and although ILSP supported the farmers financially, it was not enough to pay for the purchase of goats and inputs, to build goat sheds, and turn the activity into a sustainable business.

The social structure in the project area is based on a caste system and on the economic status of individuals. The hierarchy and local politics of the area meant that it was sometimes challenging for the field staff to select eight to ten families to take part in the programme. But in general, field workers did not have major difficulties when forming the PGs or VPGs, even if at first they did not consider the necessary activities that would lead to the sustainability of the PGs. Once the PGs were formed, it became important to infuse a sense of ownership and to motivate many group members, which became a challenge.

Another difficulty was that, before the project, PG members raised their animals on traditional fodder, using traditional goat farming methods. Participants were not aware of alternative feed options, or of fodder cultivation and preservation. The provision of vaccinations and health checks was not carried out regularly before the project started, and ILSP and the Goat Trust found it difficult to encourage farmers to take up these practices.

Further, due to the hilly geographical location of some areas, the delivery of first aid services and health care knowledge by veterinary outreach officers was limited. There was also an absence of a transparent pricing system for goats.

But in spite of these difficulties, and after a relatively short time, goat rearing has become a profitable business activity. Prior to the project's intervention in the Garud block, PG members had 1,602 goats; as of September 2017, they had 3,405. This is a 77% growth rate within 15 months. The total estimated value of the stock is INR 11.45 million (€149,900). The average stock per PG member is 3 goats with a value of approximately INR 11,000 (€145). Before the project, group members could not sell their goats other than for religious ceremonies. Since working with the project,

Above *Pashu Sakhis play a key role*

group members have sold 365 goats at the Garud market through their cluster level cooperative, and have earned INR 1,055,100 (€13,815) – a total of INR 3,493 (€45) per goat.

The price of goats has risen by 20%, and this figure is expected to continue to increase with the enhanced business knowledge of the PG members and the presence of the locally-based support personnel. As a result of increased goat prices and sales, the community's economy will improve, which is one of the project's core objectives.

With the project's support, *Pashu Sakhis* have de-wormed 7,799 goats, vaccinated 3,400 goats and treated 341 goats suffering from different diseases. The community pays the *Pashu Sakhis* and the cluster level coordinators, which makes their services sustainable, and as a result, they represent an extension of the local veternary hospital. This has led to lower mortality rates. According to the 2012 census, the mortality rate of goats in the Garud block is 13%. Data from the project shows that among the 125 PGs, 365 goats have died in the past year, which is 9% of the total. The project has helped reduce the mortality rate in Garud, most likely due to breed improvement, improved feeding practices, the provision of goat sheds, and the improved health services. It may also be due to the fact that there is now a link between the health of goats and farmers' livelihoods.

Enhancing rural livelihoods

Within a very short period of time, goat farming in the Garud block has shown that it is something that should be replicated in other blocks/clusters of the state. It will take a couple of years to evaluate the final impact of this intervention, but it is clear that goat farming can help enhance rural community livelihoods in a sustainable way if the necessary institutional systems are in place at the village and cluster level.

Strong institutions are a key ingredient for development in the rural areas, especially in mountain areas where agricultural land is scattered, where the geographic conditions are challenging, and where fewer families remain as a result of migration. The empowerment of women through capacity building initiatives, and their greater participation in the different decision making processes, helps communities accept the new goat rearing systems.

Clusters need to be identified in the mountain villages to promote goat farming in these areas. They will provide an opportunity to develop regular and locally-based support systems. Clusters can also help establish an input supply and marketing support system. Uttarakhand's local government will need to monitor and coordinate all activities after ILSP so as to ensure their sustainability. The state will also have to address challenges like migration, natural calamities and global warming, which need wider rage policies.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: India
Region: South Asia
Date: September 2017
Keywords: Rural livelihoods; goats; livestock; veterinary services

DOES ACCESS TO MICROFINANCE MATTER FOR RURAL WOMEN?

Hari Sharma Neupane and Krishna Prasad Paudel

Due to the unavailability of financial services, the lack of products, and the cost of credit, many low-income households struggle to manage their savings and invest in, and expand, small businesses. Women, as well as poor and deprived groups, are unable to manage inputs and technologies to make their farms more productive. To boost local entrepreneurship, the Improved Seeds for Farmers' Programme (KUBK-ISFP) set out to establish 30 financial institutions to increase women's financial inclusion. Membership of a microfinance cooperative has been found to improve women's empowerment and the livelihoods of poor farmers.

Cover Mrs Tulasha Upadhaya, one of the many SFACL members now running her own business

KUBK-ISFP is an initiative funded by the International Fund for Agricultural Development (IFAD), implemented by Nepal's Ministry of Agricultural Development (MoAD) since December 2012. The programme aims to support an inclusive, competitive and sustainable agricultural growth approach in six districts (Arghakhanchi, Gulmi, Pyuthan, Rolpa, Rukum and Salyan), working to increase the income of rural households through market-driven productivity improvements.

The programme tackles two key agricultural constraints: the gaps in the formal seed sector (cereals and vegetables); and the low productivity of smallholder livestock (goats and dairy). The core components of the initiative are (i) the expansion of the formal seed sector by encouraging production of Truthfully Labeled improved seed; (ii) the commercialisation of smallholder livestock; and (iii) local entrepreneurship and institutional development.

Setting up SFACLs

Microfinance is an effective tool for extending financial services to disadvantaged groups, but many people in Nepal are unable to access these services because financial institutions are often only located in urban areas. Loans required by smallholders are often very small, but the procedures to access these loans can be tedious, and many institutions view agricultural businesses as high risk.

KUBK-ISFP explored an existing cooperative model called Small Farmer Agriculture Cooperative Limited (SFACL) to expand the outreach of microfinance services. SFACLs are member-based institutions registered under the Cooperative Act of Nepal and authorised for limited financial services – savings and credit for cooperatives members. To date, 730 SFACLs in 68 districts, all of which provide financial services for over 700,000 people, are led by the Nepal Agricultural Cooperative Central Federation Ltd. (NACCFL).

In partnership with two private sector organisations – Small Farmers Development Bank (SFDB) and NAACFL – the KUBK-ISFP programme had established 30 SFACLs by March 2016. As a wholesale financing institution, SFDB provided loans to the SFACLs. KUBK-ISFP provided SFDB with a supplementary loan of US$5 million for this purpose. NACCFL established SFACLs and strengthened them through various training and mentoring activities to enable them to run their groups independently.

Following a mapping exercise, potential sites were selected in consultation with local bodies. A process of social mobilisation and mentoring then began, usually lasting for 12–18 months. Newly-established SFACL's, consisting of small groups of 7–12 women farmers, were strengthened through several training and

mentoring events that focused on book-keeping and financial management, business planning, and saving and lending procedures so that the groups could function independently. The first annual general meeting then endorsed managers and a new board of directors. After the end of the social mobilisation and mentoring process, the management of the SFACL was handed over to the community. To 'graduate', each SFACL had to have at least 400 members and have accumulated NRs. 2 million (€16,440) of member savings.

A mid-term review by IFAD recognised that the 30 SFACLs managed and led by women had provided microfinance services for 10,446 rural households, and collected and mobilised NRs. 36.85 million (€319,350) of internal resources (member savings). With these positive results, IFAD recommended the establishment of 45 new SFACLs, with additional funding of US$3 million (€2.5 million).

Results

At the end of 2016, 30 SFACLs had provided financial outreach services for 14,359 households (96.5% women, 19.95% *dalit* [socially deprived group], 24.5% ethnic groups, 61.5% below the poverty line) in 2,403 groups, and 7,965 members had borrowed money (Figure 1). On average, each SFACL has accommodated about 480 members. Clearly, SFACLs are organising vulnerable groups of people as members of cooperatives and supporting them by providing saving and credit facilities to improve the income level of the rural population.

In less than 2 years, the newly-established SFACLs collected NRs. 114 million (€936,400) of internal resources, including NRs. 27.37 million (€224,850) of share capital (mandatory deposits) and NRs. 84.64 million (€695,350) of personal savings (Figure 2). SFACLs therefore collected an average sum of NRs. 7,800 (€64) per household. In total, the mobilisation of internal resources increased by more than 94% compared to the 2015/16 financial year.

There was a 93% increase in annual borrowing from the SFDB to NRs. 76.8 million (€630,900) by July 2017 (Figure 2). The aggregate lending sum was NRs. 384.3 million (€3.15 million), of which 65% was for farming activities (61.84% livestock, 4.16% seed and vegetables) and 35% for non-farm activities which helped rural women to generate self-employment at a local level and increase their family income. Interestingly, the livestock sector constituted 95% of the total agriculture lending, with SFACL members focusing on milk collection and distribution, poultry, dairy and goat production.

Total assets collected during the 2015/16 financial year were NRs. 105.33 million (€865,400), which increased to NRs. 209.13 million (€1.7 million) in 2016/17 (Figure 3). This is an increase of 98%. In the 2016/17 financial year, the 30 SFACLs earned a sum of NRs. 17.83 million (€146,480) (total income) and spent NRs. 11.44 million (€94,000), resulting in a gross profit of NRs. 6.39 million (€52,500). The operational self-sufficiency (OSS) ratio was 1.55:1 in 2016/17, compared to 1.47:1 for 2015/16 – indicating that the SFACLs are performing well.

Different types of saving products are offered by the SFACLs. Some are planning to offer savings products

SFACLs are organising vulnerable groups of people as members of cooperatives and supporting them by providing saving and credit facilities to improve the income level of the rural population.

Figure 1: *Number of members and borrowers*

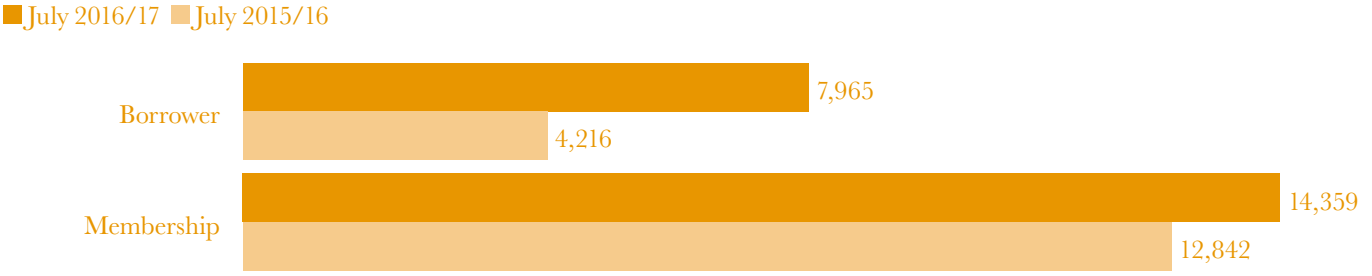


Figure 2: *Status of resources mobilisation by SFACLs (NRs. million)*

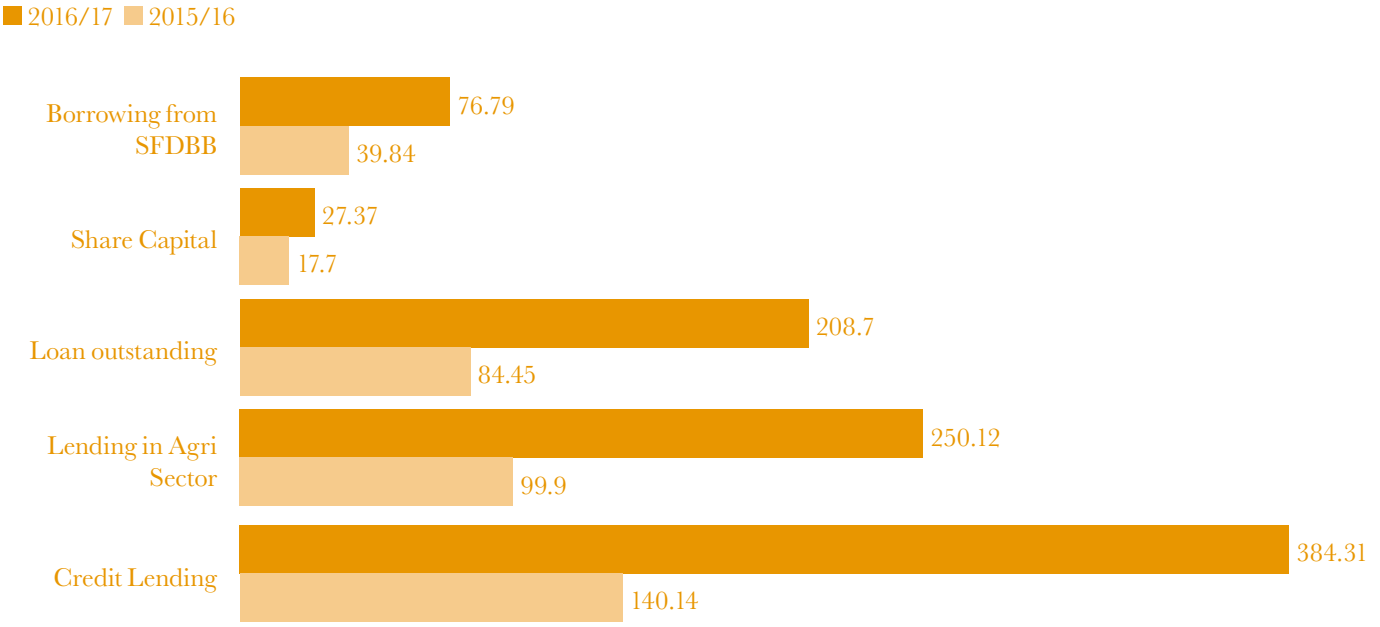
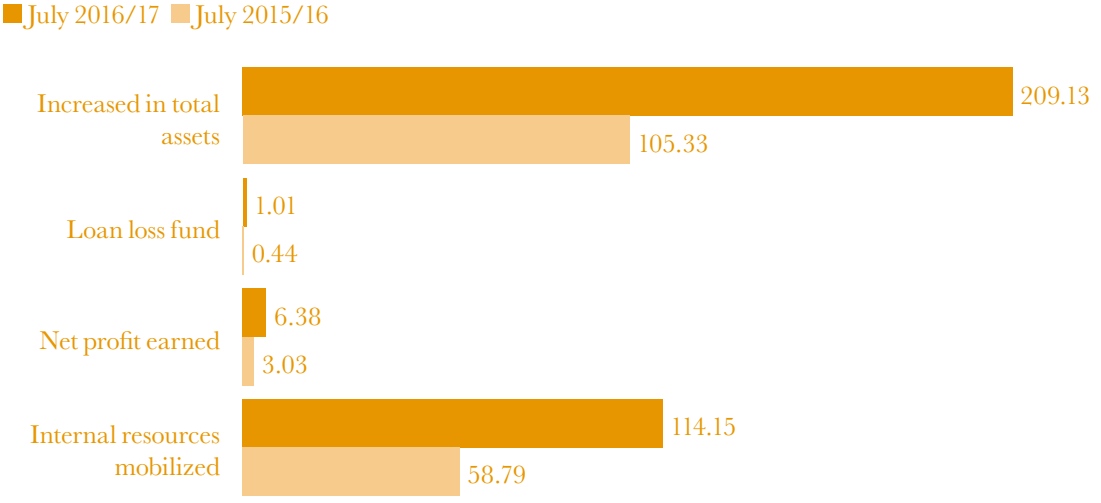


Figure 3: *Financial indicators (NRs. million)*



for children and pensions, and in addition to this, other products are customised for different localities. The SFACLs collected NRs. 39.8 million (€37,000) during the 2015/16 financial year, compared to NRs. 84.64 million (€695,400) in 2016/17; an increase of more than two times. The average monthly mandatory group saving among seven sampled cooperatives was NRs. 170 (€1.4) per month, while the monthly average for other types of savings (children savings, personal savings, fixed deposits) was NRs. 911 (€7.5) per member.

A high recovery rate is a crucial indicator for measuring financial performance. In this regard, SFACLs have a 100% recovery rate. All interest and loan instalments were collected on time, and members stated that they felt the repayment periods were reasonable. Despite this success, most SFACLs are creating a loan loss fund. By the end of the 2016/17 financial year, the total collected loan loss fund across the 30 SFACLs was NRs. 1.01 million (€8,300).

Based on feedback received from a sample survey, social cohesiveness, feelings of ownership in cooperatives and trust among the diversified social groups increased considerably. On average, SFACLs organised board meetings 16 times per year. Internal and external audits were also completed on time. Of the members surveyed (138), all felt that the selection of the SFACL board members was democratic, and that the board was working well. A total of 137 respondents felt that records are well kept and that the board is controlled by members. More than 86% of members stated that they are highly satisfied, or satisfied with the services delivered by SFACL – including loan approval processes and interest rates.

Success stories

Tulasha Upadhaya became a SFACL member in 2015 and started to save regularly. She applied for a loan and received NRs. 50,000 (€410) from SFACL to purchase milking buffalo so that she could earn enough to meet her household needs. She bought one milking buffalo and started selling 7 litres of milk per day in the local market, earning NRs. 126,000 (€1,034) in one lactation period (10 months). This income enables her to pay her children's school fees, save money and pay back the loan.

Deba Subedi is a SFACL board member. After the establishment of the SFACL, she borrowed NRs. 10,000 (€820) to purchase one goat with a female kid. She has also used SFACL loans to purchase a milking buffalo. With the profits, she has been able to expand her business and enable her husband, who has been working abroad, to return home and help her to diversify her business further. Deba is currently earning about NRs. 22,000 (€180) per month from her business, which also includes poultry farming and vegetable farming, and she hopes to purchase a mini tractor to further expand her business.

Does access to microfinance really matter for women farmers?

The project found that the SFACL model is better than other microfinance institutions at increasing financial access for women because:

i. the programme emphasised women participation from its inception;

ii. each household in selected areas was given the opportunity of joining a group;

iii. women from poor and deprived groups were given priority and provided with women social mobilisers;

iv. women leadership was encouraged by motivating them to lead groups and be on the board of directors;

v. credits of under NRs. 100,000 (€820) did not require collateral, the poorest members did not have time constraints to pay the loan back, and loan procedures were easy to follow;

vi. SFACLs are linked with SFDB which provides wholesale credit and further strengthening of the groups;

vii. SFACLs offer various saving products and the cost of the credit is relatively lower than other microfinance and banking institutions; and

viii. there is high social cohesion, irrespective of caste and gender, and women leaders are deemed to be trustworthy.

Among the loan borrowers sampled (138 people), 97 claimed that the SFACL loan had helped to improve their livelihood. Women who received loans were also seen as being more responsible than men, repaying their interest and loan instalments on time.

Concerning empowerment, the project found that 94% of women members were involved in household level decision-making processes, including property sales. A similarly high percentage of women (95%) felt that they did not face any difficulty in going to the SFACL activities, study visits or other training/workshop events. Women claimed that their role in the family had increased since they began to manage money and be more autonomous and economically independent. Clearly, this indicates that power dynamics are changing gradually in favour of women.

Our work has shown that even if SFACLs provide a small amount of credit, this is decisive in improving the livelihood of a family.

Lessons learned

The figures described above show very positive results. In addition, the work of the Improved Seeds for Farmers Programme, and the establishment of many SFACLs in particular, has shown a few key lessons. The first one is that the initial mapping of financial institutions and the selection of a site is a fundamental activity. If household numbers in a particular area are limited, or financial services are already available, SFACLs will struggle to increase their membership.

Equally clear is that a woman-focused approach is vital. Poor women were given priority in joining SFACLs and the board of directors were women. Women were also selected as facilitators and managers to support the daily business activities of SFACLs. Continuous training, mentoring and facilitation activities helped to provide women with management skills.

Our work has shown that even if SFACLs provide a small amount of credit, this is decisive in improving the livelihood of a family. The provision of technological packages for members is also very important to improve productivity and production of an agribusiness. And next to it, the establishment of linkages with a wholesale lending institution is crucial for SFACLs to meet the demand for credit.

A last point to mention is that risk management is crucial. SFACLs have therefore introduced loan loss provision so they can mitigate losses. But we have also found that women leaders are trustworthy and motivate other members to save. SFACLs have stated that lending to women farmers is less risky than lending to men because women farmers do not misuse the credit and are more likely to pay the interest and loan instalment on time.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: Nepal
Region: South Asia
Date: September 2017
Keywords: Savings and credit; microfinance; women groups; entrepreneurship

BETTER LIVELIHOODS THROUGH POULTRY ENTERPRISES

Pratyush Gaurav

In the state of Bihar, India, the Integrated Poultry Development Programme has been working to improve the livelihoods of poor and marginalised rural people. By working to strengthen the entire value chain, the project has increased the income of the most marginalised groups, improved their nutritional diversity, and provided livelihoods for input suppliers and dedicated community professionals who support farmers and facilitate market linkages.

Cover VRP involved in vaccination of chicks

The Bihar Rural Livelihoods Promotion Society (BRLPS), known locally as JEEViKA, endeavours to develop and promote livelihood options to match the resource base and capacities of communities in the state of Bihar, India. To strengthen the livelihoods of rural households – especially women who are landless or have small land holdings – JEEViKA established the Integrated Poultry Development Programme in 2012, with support from the Bihar Government's Department of Animal Husbandry and Fish Resources.

Rearing poultry does not require a high level of inputs or investment, so it is a popular choice with rural households, and the sector also provided an opportunity to meet a high demand for eggs and poultry meat – as Bihar was largely dependent on supplies of eggs and poultry meat from other states. The National Egg Coordination Committee (NECC) reported that 2.5-3 million eggs were imported into the state each day prior to 2012. Average consumption of eggs per person in Bihar was therefore only six to eight eggs a year, compared to the national average of 45.

The Integrated Poultry Development Programme

The aim of the programme was to establish a network of 'mother units' – where one-day-old chicks are reared for 3–4 weeks – to provide a hub for forward and backward linkages. Once reared, the chicks are supplied to households organised into informal producer groups, where they are reared for eggs and meat. Dedicated community professionals, known as village resource persons (VRPs), support households to ensure proper feeding and vaccination for chicks. They also facilitate linkages with the local market.

The mother units are owned by cluster-level federations (federated bodies of self-help groups). Each household pays a fee of INR 3,150 (€42) to their federation over a period of 18 months, and in return receives 150 chicks (six lots of 25), subsidised housing for the chicks, and VRP support. After the first 18 months, households have to procure chicks at market cost.

With facilitation from JEEViKA, the federations manage the supply chain:

Production:

- **Mother units** – are operated by an experienced local entrepreneur. They rear day-old chicks up to 4 weeks of age, complete vaccinations, and then sell them to individual households.
- **Smallholders** – Rearers are mostly landless or marginal farmers. They are provided with 150 birds to rear for 18 months and a shelter made from locally-available materials, with half of the cost borne by the project. Through the VRPs, the Integrated Poultry Development Programme also

helps farmers to explore market opportunities to exchange their surplus produce. The female birds are kept to produce eggs for the market and household consumption, and the males are used for meat once they attain a weight of 2–2.5 kg (after about 2 months). The female birds are slaughtered and sold for meat after laying about 180 eggs.

Supply:

- **Day-old-chicks** – are sourced from private hatcheries. The hatcheries are identified by the Government of India, which then transports the chicks to its regional offices and sells them to mother units at market price.
- **Feed** – is supplied by a number of private feed-sellers.
- **Vaccine/medicine** – is regulated and controlled by community based organisations through community procurement from local markets, and community professionals are trained to vaccinate the birds.

Provision of services

- **Group formation** – JEEViKA organises landless women into self-help groups, which are then federated into village organisations, and then cluster level federations. The self-help groups hold weekly meetings to discuss progress and emerging issues.
- **Training** – All participants linked with the poultry intervention receive relevant training on poultry keeping.
- **Credit** – JEEViKA and the Department of Animal Husbandry and Fisheries provide credit support at various levels, from mother units through to poultry producer households.
- **Extension** – Extension services are provided by VRPs who are trained by JEEViKA. Women farmers are also able to raise concerns during their monthly group meetings that the VRPs can then help them with.
- **IT** – Scaling up of the intervention led to the need of digitisation of poultry records such as vaccination, mortality, distribution of birds, income flow and its utilisation. A mobile application was designed by BRLPS to capture this data at the mother unit and household level.

Impact on livelihoods

JEEViKA's backyard poultry intervention has had four notable achievements:

(a) **The scale of its operations:** since 2012, the programme has expanded from one to 38 districts in the state, involving 180,000 households.

(b) **Incomes:** Bihar's poorest and most economically vulnerable households have seen their income increased. On average, participating households have increased their monthly income by INR 3,500–4,000[1] (€46–53) from selling chicks and eggs. With the additional income from poultry, rural households have been able to invest in other areas, including education, health, and family savings. The project also helped generate employment opportunities for over 400

[1] *The average number of chicks per lot, received by individual members, was 24 (10 cocks, 14 hens). Average production per lot was 152 eggs and 27 kg of meat. The average income per lot was INR 4,365 (€58) and average expenditure, including member's contribution, was INR 369 (€4.8), therefore net income per person was INR 3,996 (€53.2).*

Story of change

For years, Saroj Devi hid her identity behind the four walls of her *kutcha* house (made from mud or thatch), where she lived with her children and husband, Dinesh Paswan. Dinesh migrated to nearby towns to earn money, but with their meagre income source the family was soon under the grip of money lenders. For their household, which includes seven people, agriculture is the primary source of income. With a landholding of just 130 m^2, agricultural options were limited to one main crop and in some cases a small second crop.

Saroj's life started changing in 2009, when she joined a self-help group. She took a loan of INR 10,000 (€132) from the self-help group to pay off the money lenders, and in 2012 attended poultry training organised by JEEViKA. After the training she established a poultry mother unit at her house for which she took another loan of INR 150,000 (€1,980). In 2014 she joined a poultry business group linked with a mother unit. In the first 4 months, Sanju received 150 chicks in six lots. The poultry intervention is a low input, low risk secondary income generating option; the average net income per lot (25 birds) is INR 4,893 (€65) against an expenditure of INR 393 (€5.20). In 16 months she earned INR 29,358 (€388) net income from egg and meat production. Now she lives in a *pucca* house (made from high quality materials), and has 670m^2 of land and a motorbike. Dinesh no longer migrates; instead he is engaged in agriculture and helps Saroj at the mother unit. She is ensuring a bright future for her children by sending them to a nearby private school.

Above VRP involved in vaccination of chicks

VRPs, and created a locally-based cadre of resource persons to provide veterinary services. These men and women earned about INR 2,500 (€33) per month for their services.

(c) Coverage: The intervention included the most marginalised sections of rural Bihar, many who were landless and would not have benefited from agriculture-based livelihoods. Nearly 30% of the households involved in the programme were also from scheduled caste and tribe communities.

(d) Improvements to household nutritional diversity: poultry farmers improved their nutritional status with the intake of meat and eggs, as required for a healthy diet. Studies on nutritional diversity by the Food and Agriculture Organization of the United Nations (FAO) and by the Government of India have shown that there is a key link between productive and income generating activities and improvements in nutritional status for landless households.

In summary, three factors contributed to the success of the poultry intervention. The first one of these has been JEEViKA's approach of directly targeting and addressing the needs of landless households, and of providing households with intensive and ongoing technical support. But equally important has been the support given to the formation of producer organisations to take responsibility for bulk procurement of raw materials and aggregation.

Key issues	Current approaches	Future course of action
Resource utilisation	Use self-help groups for poultry interventions	Convert the cluster of household producers into cooperative or producer companies.
	Convert landless women to poultry producers who rear 150 birds for 18 months	Ramping up from 150 to 500-600 birds by supporting the collectivisation of smallholders to enable economies of scale for accessing inputs and services.
	Backward linkages are currently fragile and forward linkages are ignored	Backward linkages: production and technical support (training and skilling, extension services) and availability of raw materials needs to be strengthened. As part of this, farmers should have access to round-the-clock para-vet support, and weekly monitoring of production parameters. Forward linkages: with proper branding, birds sold through cooperatives or producer organisations can influence market prices and demand.
Productivity growth	Acceptance of low smallholder productivity with low input/low output birds	Moving towards improved inputs/improved outputs can be done with the development of alternative sources of poultry feed, based on crops grown locally, diversification of feed sources based on local practices, such as rearing termites in earthen vessels as high-protein feed for poultry, adding crushed snail shells to feed, promotion of vermi-compost in mixed farming systems and the feeding of greens, such as onion and garlic leaves.
Boosting growth	Credit for the sector required subsidisation from the project	Need for insurance cover for poultry rearing, targeted at smallholders. Risk mitigation can be achieved by delinking individual producers from fluctuations in both input and output markets; setting up mechanisms to absorb the effect of price fluctuations (i.e. during festivals, or widespread poultry diseases); and discriminating between good and bad production performance in the prices farmers can achieve.
	Greater focus on output and yield	To ensure that production costs remain competitive, the poultry producer payments have to be linked with the efficiency of poultry federations.

Scaling up: generating a virtuous cycle

Each step in the Integrated Poultry Development Programme model was crucial, but the impact of each is limited by the weakest link in the value chain. The challenge of further expansion demands approaches that will fundamentally shift the way poultry interventions are implemented. Functioning markets in which individual incentives are aligned with the social good, with prices which reflect real costs, and where honest work yields a dignified way of life, are crucial.

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This is one of the results of the process started by the "Capitalization of Experiences for Greater Impact in Rural Development" project, implemented by CTA, FAO and IICA and supported by IFAD.
http://experience-capitalization.cta.int

Country: India
Region: South Asia
Date: September 2017
Keywords: Poultry; rural livelihoods; income generation activities; agribusinesses

BUSINESS LITERACY CLASSES FOR ENHANCING NEPALESE WOMEN'S ACCESS TO KNOWLEDGE, SKILLS AND RESOURCES

Renuka Rai and Krishna Thapa

Business literacy classes are addressing the knowledge gaps between men and women in Nepal, and developing the business-related knowledge and skills of women commercial farmers. Not only has this intervention improved women's confidence when establishing agribusinesses, but their involvement in decision-making within producer organisations and households has also positively increased.

Poverty in Nepal is primarily a rural problem, and it is strongly associated with gender, ethnicity, caste and region. Women are among the most vulnerable in society as they are most likely to stay at home to take care of elders and children, while their husbands migrate for work. Women constitute more than 60% of the agricultural labour force but have limited access to land, production technology and training.

The High Value Agriculture Project in Hill and Mountain Areas (HVAP) is a joint initiative of Nepal's Ministry of Agricultural Development and the International Fund for Agricultural Development. The aim of the project is to reduce the poverty and vulnerability of 13,500 households in the hill and mountain areas by integrating the rural poor – especially women and marginal groups – in high value agriculture value chains and markets. HVAP is a 7.5-year project and has received grants of more than US$ 18 million since its implementation started in February 2011.

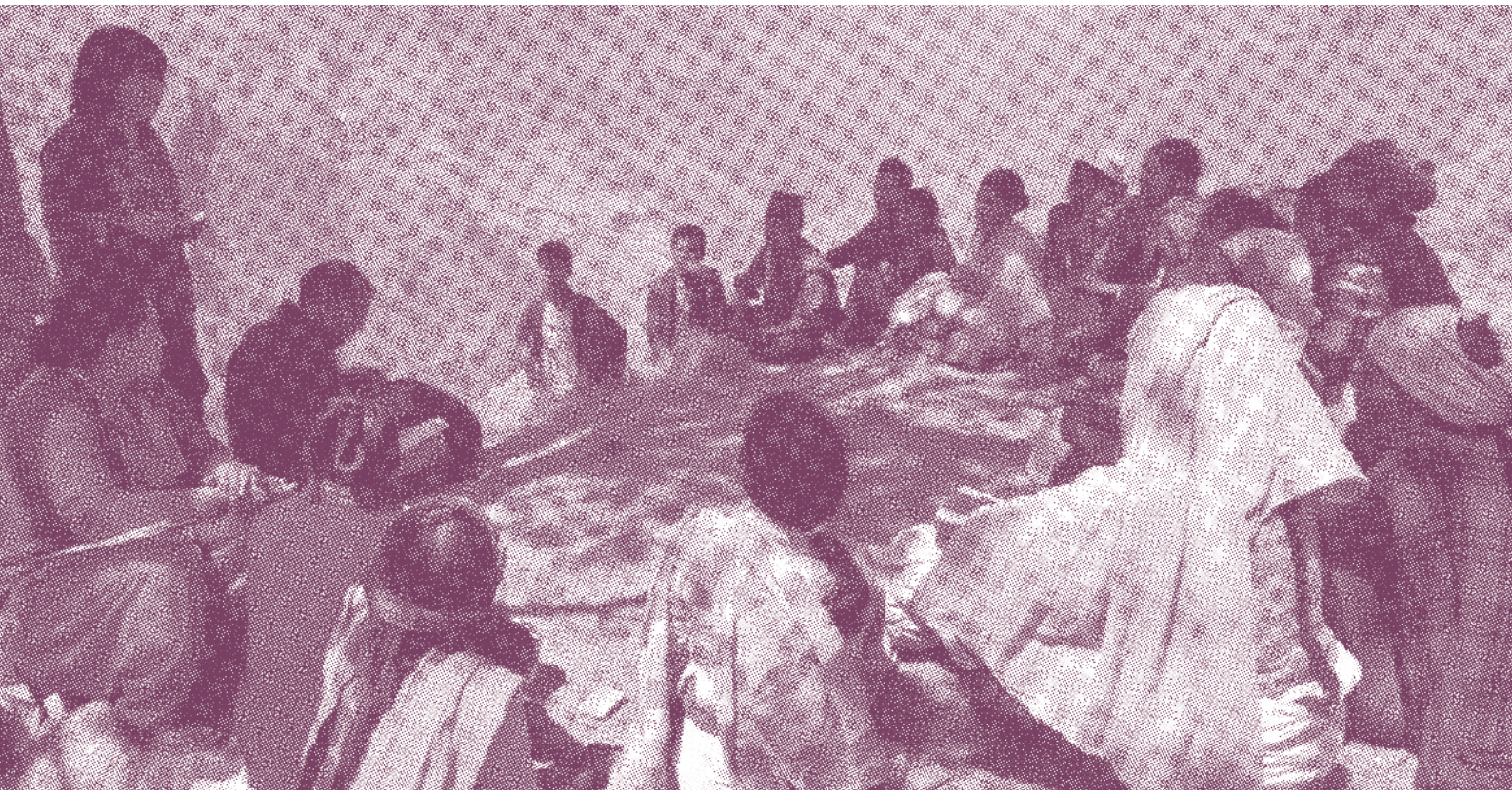
By July 2017, the project had supported 447 producer organisations (POs), all of which are either legally registered and function as 'farmer groups', or are not registered and are called 'cooperatives'. It had implemented more than 600 sub-projects, with committed grants of NPR 604 million (€493 million), directly benefiting more than 15,000 households. The beneficiaries of the sub-projects were women (63%) and socially-excluded groups (32%); 91% of project beneficiaries belong to poor households and 26% to extremely poor households (where households considered 'extremely poor' are those having food sufficiency lower than 3 months; moderately poor are those having food sufficiency of up to 6 months).

Regarding the capacity building activities, the project has conducted 950 trainings – both social and technical – where women's participation in both was fairly high – 62% and 54%, respectively. Regarding the participation of women and socially excluded groups, the project has exceeded its targets. However, there is still scope for further improvement as both demographics were slightly under-represented in the technical trainings (when compared to their membership in the producer organisations).

Business Literacy Classes, BLCs

About 49% of the women who joined these courses are holding key positions in the 447 POs, but they still lack the required level of confidence, capacities and leadership qualities to fully perform their roles and responsibilities. Besides, women's drudgery in production work is widespread in many different value chains, like goats, where it is typically women who are engaged in the different steps involved. The issue of reducing women's workload, and strengthening their

Cover Manju Chaudhary on her farm



Above BLC sessions took place twice in a week, for a maximum of 3 hours per day

voice and bargaining power within POs and households is crucial. As such, HVAP designed business literacy classes (BLCs) to address the knowledge gaps between men and women, and to develop the business-related knowledge and skills of women. Since 2013, when the BLCs were first introduced, 252 BLCs have been conducted, benefitting almost 7,000 women farmers.

The level of women's meaningful participation in POs was ascertained during individual interviews conducted with 42 women participants of the BLCs, and through focus group discussions with 27 groups, with a total of 451 BLC participants. During such discussions, most women described experiences of not being able to attend meetings, trainings or workshops, and even when they did participate, they did not have the confidence/support to voice their opinions during the events. The interviewees also shared that women are frequently not considered for the key management positions within a PO, with no or very limited access to strategic discussions. When women do have a key position, they themselves expressed not being able to fully perform their roles and responsibilities effectively, and having to seek support from men for procurement-related and record-keeping tasks.

Most of those who joined the focus groups shared that, before the BLCs, they did not have adequate knowledge and skills related to commercial production management, and to the social and business aspects of a value chain, which they thought were the most important skills needed to enhance their businesses. For instance, although off-season vegetables (OSV) received the highest investment from the project, the beneficiaries – mostly women – generally lacked the technical knowledge and skills to produce them commercially. In a similar way, women farmers did not have adequate knowledge about sustainable goat management; they were reluctant to construct improved goat sheds and initiate fodder plantation.

The intervention

Initially, the BLC was a 6-month intervention, offering a comprehensive package of training on (i) value chain development and commercial production; (ii) gender, social inclusion and institutional development, and (iii) business and entrepreneurship development. The course focused on post-literate women farmers, and in each BLC a maximum of 27 persons were invited to participate. This ran during 48 days, with sessions taking place twice in a week for a minimum of 3 hours a day.

The key strategy and intervention process considered different steps:

BLCs have enhanced women's technical skills to the point where some are now working as local service providers.

- BLC resource books were developed using in-house expertise. Volume One is about technical knowledge and skills on commercial production and management; Volume Two is on social, institutional and group strengthening; and Volume Three is on business skills, marketing and entrepreneurship development. The BLC manuals have been endorsed by Nepal's Ministry of Agricultural Development and all BLC participants receive the volumes for free.
- Priority is given to women-only/women-led POs and POs with a high involvement of socially-excluded and risk-averse households to conduct BLCs. HVAP social mobiliser field workers are assigned to select the POs within which a BLC will be conducted.
- One woman is selected to work as a BLC facilitator (BLCF); the other important criteria are that the candidate has a higher secondary level of education, gives priority to *dalit* and *janajati* women, and that is nominated by their respective PO. Each BLC has one BLCF who receives a 7-day training-of-trainers course prior to facilitating BLCs.
- In each BLC, 25-27 PO members are selected, with priority given to poor women and women from socially excluded groups or risk-averse households. However, BLC participants should be able to read and write their own names.
- Financing: For the Kalikot and Jumla districts in the Karnali region – one of the poorest in Nepal – the project provided NPR 140,850 (€1,145); for the other five districts (Achham, Dailekh, Jajarkot, Salyan and Surkhet) it provided NPR 108,450 (€884) to cover all class costs, including an allowance for the BLCFs, stationary and snacks.
- Follow up and monitoring: A management committee is formed by members of the same PO who have an overall responsibility to manage, and ensure that BLCs are running effectively. HVAP project staff also carry out regular monitoring of BLCs. The committee is responsible for providing documentation to the project, which they need for project payment release. Spot coaching/feedback is provided to the BLCF by social mobilisers, and the district and central level project staff.

Above *Enhancing women's technical skills*

Key results

A total of 251 BLCs have been conducted; 29 in the first year, 47 in the second, 75 in the third and 100 in the fourth. These have shown positive results in terms of:

a. Knowledge and skills. The BLCs have been widely welcomed by farmers, and have also proven to be promising initiatives in terms of deepening self-mobilisation (see Box). With the introduction of BLCs, women have had a better access to training in technical, group management and business aspects. During the FGDs/interviews, women farmers expressed that after attending BLCs, their active participation in the POs – including in VC transactions – has deepened as a result of their increased confidence and new skills.

b. Increased income. The table below provides information from 17 respondents randomly picked from the Achham and Salyan districts. The information is as of July 2017 and is encouraging in terms of relative income gains. Most have reported an increase in production area, productivity, and an increase in income by more than NPR 30,000 (€245). (Source: HVAP MIS)

Table 1: *Poverty category of BLC participants and net income changes*

Category (as per poverty and social grouping)	Increased income (%)	Category (as per VC)	Increased income (%)
Poverty		Ginger	558
Extreme Poor	186	Goat	213
Moderately Poor	542	Turmeric	142
Social grouping		Timur	740
Dalit	1,002	Off-season vegetable	1,214
Janajati	270	Overall average	442
Other Caste	486		

c. Family consumption patterns. With increased income, women's dependency on men has decreased and, in general, they have also been found to spend more on their children's education, and also on buying more nutritious foods such as meat and eggs. The quality of their clothes and other basics have also improved.

d. Participation in local politics and community works. Women's involvement in decision-making, both within the POs and their households, has positively increased. For instance, 27% of the POs in Salyan and 35% in Surkhet are now headed by women. BLCs have also enhanced women's political awareness and their leadership capacities. In Surkhet, for example, 50 former BLC participants/facilitators have won the local elections.

e. Business and financial management. BLCs have helped women farmers to maintain their business records by teaching them to use simple calculators, and have taught them to analyse their production costs and their profits and losses, in turn, increasing their bargaining power at the market. Unlike in previous years, women farmers learned and have started to prepare a crop calendar based on which farming practices they follow, resulting in increased productivity and income.

f. Technical services. Most importantly, BLCs have enhanced women's technical skills to the point where some are now working as local service providers such as constructing plastic houses, seed storage, and dipping tanks, on a fee basis. For instance, Goma Budha, a former BLC participant of Devasthal, Salyan, charges NPR 4-6,000 (€33-50) for teaching OSV farmers to construct plastic houses.

Out of these 251 BLCs, 68% were conducted by 'farmer groups' and 32% by 'cooperatives'. In terms of VC distribution, 32% of BLCs were carried out by POs focusing on off-season vegetables, 26% by goat POs, 16% by apple POs, 9% by both turmeric and ginger POs, 6% by timur POs, and 2% by seed POs. And in terms of location, 19% of BLCs were conducted in Surkhet, 15% in Dailekh, 14% in Jajarkot, Jumla, Kalikot and Salyan districts, and 10% in Achham. Out of 252 BLCFs, 9% were Dalit, 10% were Janajati, and the rests were Brahman/Chhetri. In 252 BLCs, 6,484 women PO members were trained. A total of 90 new BLCs were planned for the 2017-18 season, hoping to complete up to 342 BLCs during the entire project period.

Higher incomes

Manju Chaudhary joined a Fresh Vegetable Production Farmers' Group in Sallizabar in February 2014, and started growing off-season vegetables in a small patch of rented land (0.025 ha). In the beginning, she produced vegetables mostly for family consumption and sold the rest at the nearby market, earning NPR 15,000 (€120).

Being an active member of the Farmer's Group, she received technical training in commercial vegetable production. However, the training was insufficient to gain the technical and business skills needed to expand production, and with limited knowledge, Chaudhary was not sure whether to fully dedicate herself to the production of vegetables.

However, after attending a BLC for 6 months, Chaudhary has become more confident and knowledgeable in the technical, social, business and marketing aspects of vegetable production. She has since increased the size of her rented land to 0.175 hectares, and has started growing more off-season vegetables such as tomatoes, cabbage, cauliflowers, and beans, which get a high market price. With her improved knowledge, she now earns NPR 175,000 (€1,380) to 200,000 (€1,585) just from a one season and with this enhanced income she has been able to send her children to a private school, afford nutritious food for her family (meat, eggs, butter), and start saving.

Conclusion

The different BLCs have been widely welcomed by farmers, and have demonstrated the significant benefits of providing group mobilisation services for producer organisations. The embedded model is likely to greatly increase the sustainability and empowerment of the groups beyond the project.

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FINANCIAL MAINSTREAMING FOR THE RURAL POOR: THE JEEVIKA EXPERIENCE

Mahua Roy Choudhury

In the state of Bihar, India, the mobilisation of rural women into community self-help groups has emerged as an effective means of linking the poorest members of society with the formal banking system. The results seen in a relatively short time have been impressive.

With 104 million people, the state of Bihar, in the east of India, accounts for 8.6% of the country's population. Access to financial services is essential to address the high rates of poverty in the state, and the country at large. However, only 4.8% of the nation's commercial bank branches are operating in the state. Estimates by the Institute for Financial Management and Research in Chennai, India, suggest that the branch population per bank in Bihar is approximately 23,000, in comparison to the national average of 15,000, and out of 534 blocks in the state, 37 have no branch at all.

A weak banking infrastructure means vast sections of the poor have to depend on high-cost credit from informal moneylenders, and poor households are unable to invest in self-employment opportunities due to limited access to credit, limited asset and capital ownership, and long-term indebtedness. In response to this issue, and with financial assistance from the World Bank, Bihar's government launched the Bihar Rural Livelihoods Project in 2006. The project aimed to provide rural households with innovative, scalable and sustainable models for improved livelihood opportunities, such as rice intensification and backyard poultry.

The project targeted women from poor rural households and selected the target areas for the project via a poverty and social assessment, which analysed poverty levels, social vulnerability, the potential for improvement in livelihoods and social capital. Six districts were initially selected – Gaya, Khagaria, Madhubani, Muzaffarpur, Nalanda and Purnia – but the programme has since been scaled out in all 38 districts of Bihar.

The Bihar Rural Livelihoods Promotion Society (BRLPS), also known as JEEViKA, was established to implement the Bihar Rural Livelihoods Project, which aimed to increase the socio-economic empowerment of poor rural households in the state. The project planned to do so by promoting the establishment of community groups with sufficient capacity to productively engage with formal financial institutions, existing market systems and public programmes to improve their livelihoods, health, education and asset creation.

JEEViKA has mobilised nearly 8.2 million rural women into more than 650,000 self-help groups (SHGs) – each consisting of 12 to 15 rural women – and their associated federations. Through the nurturing and strengthening of these community institutions to become credible and bankable clients, the SHGs have emerged as the most effective platforms for linking the poorest members of Bihar's society to the formal banking system.

Cover A Bank Mitra assisting a SHG member

The institutional architecture for financial inclusion

JEEViKA adopted the approach of SHG-based financial access to enable bank branches to reach a larger client base by servicing smaller sets of community groups/institutions. These groups were advised by the project to meet regularly, to save collectively and lend from the group's internal corpus. The programme provided catalytic funding in the form of a Community Investment Fund (CIF) to initially stimulate financial intermediation, instil the habit of on-time repayment among beneficiaries, and build credit histories for its members. Articulate SHG members with a proven track record of adhering to on-time loan repayments were identified as community mobilisers (CMs), and facilitated the SHG meetings and maintained books of their financial transactions. With a proven credit history and a small corpus generated by way of savings and interest, the SHGs have been able to leverage larger credit amounts from banks.

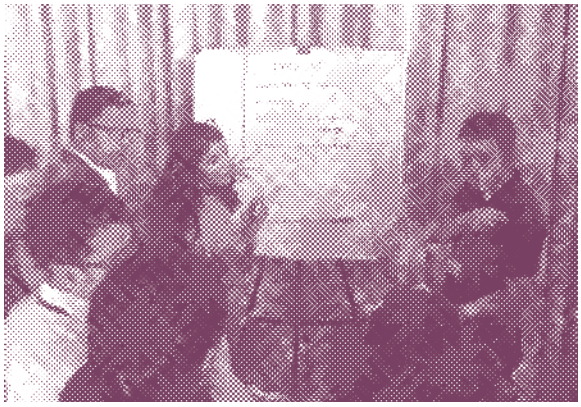
Through the project, groups of 10 to 15 SHGs were federated into village organisations (VOs), which act as an important interface between the local bank branch and member groups, facilitating ongoing credit linkages through a committee. The committee undertakes the monitoring of loans accessed by group members and follows up on repayments. The majority of the project funds – like CIF – were consolidated from the SHGs at the VO level, and then revolved and redistributed based on the needs of its members. This fuelled a virtuous cycle of ongoing reinvestment into income-generating activities, such as crop and livestock-based farming activities, thereby enhancing incomes at the household level.

Specialised financial products were also introduced at the VO level for members to access funds at differential interest rates for the purchase of food grains during the lean season, or for emergency health-related expenses. Groups of 25 to 40 VOs were further federated into Cluster Level Federations (CLFs), which acted as large-scale financial intermediation platforms, addressing a wide variety of the community's financial needs. CLFs monitor the overall financial health of member institutions and act as vital points of contact for banks.

Key interventions and innovations

Over a decade, JEEViKA has worked on addressing key constraints on both the supply and demand side of financial service delivery. Some of the key initiatives undertaken by the project towards its goals of financial inclusion are summarised below:

- **Building local capacities.** The programme focused on developing strong community-led facilitation with locally identified CMs and book keepers. To date, over 20,000 community CMs are providing accounting services to the community institutions.
- **Strong financial management systems.** To encourage financial management within community institutions, simplified and uniform books of records for financial transactions were introduced at all levels. This enabled the project to standardise performance measurement systems, whilst ensuring the desired rigour in financial management was achieved. The project also instituted large-scale annual audits of the federations to further strengthen and maintain financial management within the community institutions.
- **Bank *Mitra* – a familiar helping hand.** To facilitate transactions between SHGs and the banks, JEEViKA introduced the idea of bank *Mitras* – SHG members placed within bank branches to act as interfaces. This was a major milestone for the programme where informal, non-bank employees were allowed to support the community while being stationed within the branch offices. More than 2,000 bank *Mitras* are currently working with local bank branches in Bihar supporting thousands of groups to effectively engage with their lending partners, while ensuring a healthy loan portfolio for the banks.
- **Specialised financial products at VO level.** The programme proactively analysed credit consumption patterns of SHG members and responded by introducing specialised financial products at the VO level. A food security fund was introduced to finance collective procurement of food grains for rural households. Similarly, a health risk fund was introduced for members to borrow at lower interest rates for health-related emergencies. Both these funds enabled the project to reduce the vulnerability of the poorest, whilst ensuring the availability of funds for productive investments.
- **Partnerships with commercial and regional rural banks.** JEEViKA worked on the strategy of entering into a formal Memorandum of Understanding (MoU) with commercial and regional rural banks in order to leverage timely financial support for SHGs. Bihar was one of the first states in India to enter into this type of partnerships with financial institutions in the form of MoUs. The strategy was widely recognised and many more states implementing similar programmes have followed suit.



Right Specialised financial products were also introduced at the village organisation level so that members would access funds at differential interest rates for the purchase of food grains during the lean season

- **Policy advocacy with apex institutions.** Policy advocacy was done with apex institutions like the National Bank for Agriculture Development, the Reserve Bank of India and the State Level Banking Committee (SLBC) to facilitate timely support to SHGs from the banks. Continued advocacy helped to enhance the minimum amount for a first instalment for financing SHGs – from approximately 8,000 Indian rupees (INR) to INR 150,000. SLBC has also ratified that the second instalment of credit linkage will stand at INR 250,000.
- **Strong liaising with banks.** A culture of periodically following up with the banks to proactively address any pending issues was inbuilt into the process. Issues like the requirement of bank documents, potential applications, pending disbursements and repayments were taken up as a priority with all banks. The whole strategy helped in creating an ambience of acceptability for the SHG model as a means of financing.
- **Introduction of insurance services.** Expanding the range of financial products available to the community beyond savings and credit, JEEViKA facilitated the linkage of over 860,000 SHG members (mostly women) to low-cost insurance coverage. The project undertook concerted efforts in generating awareness regarding the merits of insurance and the major insurance products available. Support was also provided in regards to document preparation for insurance enrolment, death claim settlements and follow ups with the Life Insurance Corporation to ensure settlements were reached.

"My life has taken a complete U-turn since joining the Sagar SHG. With easy access to credit at an affordable rate of interest, I have paid back my debt to the Sahukar (money lender) and have also been able to get back my mortgaged land. My husband, who had migrated to Delhi to pay the high monthly instalment of the Sahukar, is back and working in agriculture and my son now owns a poultry shop. I feel secure," says Manti Devi, an SHG member from Gaya in Bihar.

Key result areas

The most significant result is the project's massive outreach. JEEViKA has mobilised over 7 million rural households into more than 650,000 SHGs, which have been further federated into nearly 36,623 VOs and 602 CLFs. These institutional platforms have enabled the poorest of rural Bihar to collectively access banking services. Presently, 3,672 rural bank branches are engaged actively in financing SHGs.

Figure 1: *Pace of SHG formation*

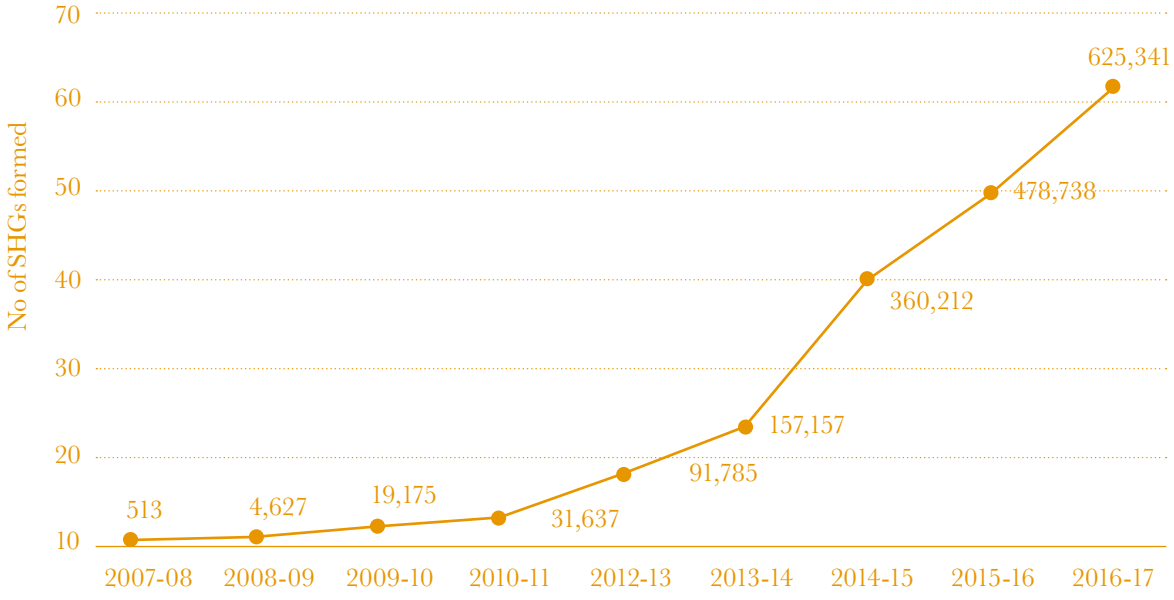
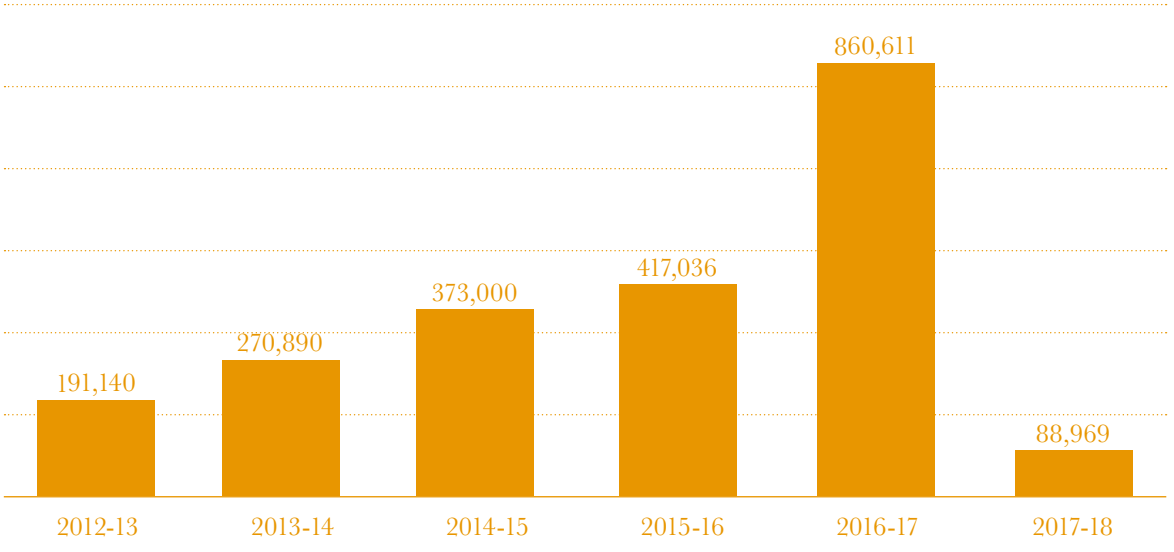


Figure 2: *Enrolment of SHG members*



Taking into account the prevailing average of 16,100 people per bank branch, the banks have been able to reach 12% of their client base by servicing only 1.1% of corresponding bank accounts through SHGs.

SHG-bank linkages in Bihar have undergone an inspiring transformation over the last decade. Under the programme, the community institutions have leveraged credit to the tune of €427.5 million from banks, while generating a further €53.5 million in community savings. Starting from a base of less than €836,000 in 2009, the community institutions have emerged as vital stakeholders for banks, leveraging €220 million in 2016-17 alone. Significant investments made into processes of JEEViKA have enabled the programme to replicate the lessons on a larger scale. In the last 2 years, the programme has shown a 100% annual growth in credit linkage.

At the same time, JEEViKA has facilitated coverage of more than 860,000 SHG members under the government-sponsored *Aam Aadmi Bima Yojana*, an individual insurance scheme that insures women against death and disability. Participation in the government scheme has grown significantly, and members with children studying secondary and higher

Bank remittances no longer a boon

Saroj Devi, an SHG member from Nalanda in Bihar, happily shares her experience of opening her own bank account at the State Bank of India. She can now easily withdraw remittances sent by her husband who works in Jaipur. Prior to opening her own account, she says that she received the remittances through money orders, wherein she had to incur an extra expense of INR 200 per month. But now, her husband easily transfers the remittances, which are received into her bank immediately. "The long wait for money is gone. My bank account gets credited on time, and this has helped me to better plan my finances," says Devi. The receipt of remittances directly into Devi's account has encouraged her to save regularly, and she can now manage her finances better. Charges for receiving the remittances have also reduced to as low as INR 25.

classes are able to undertake a scholarship programme to complete the same school years. With JEEViKA-SHG members constituting 98% of all beneficiaries covered under the scheme, this demonstrates the effectiveness of institutional platforms in building convergence with government programmes.

And equally important is the leveraging effect of JEEViKA. JEEViKA institutions have been successful in leveraging high amounts of credit against low investments. Against a direct project investment of €257 million in the form of CIF, the community institutions have leveraged €480 million in bank credit and community savings. This puts the leveraging ratio of the project at 1:87, indicating that for every $1 (€0.84) invested in the project, the community institutions have been able to generate an additional investment of $1.87 (€1.56). This is a complete reversal from the state's overall credit-deposit ratio, where for every $1 invested by rural communities, only $0.32 (€0.27) is being leveraged as credit. Furthermore, project investment along with community savings form a significant corpus fund for community institutions that allows them to leverage more formal credit on an on-going basis.

Lessons learned

The continuous emphasis on standardised operations and uniform procedures to instil financial discipline in the community-based organisations helped in overcoming the challenges of weak banking infrastructure. JEEViKA adopted a standardised model of building member capacities on key principles of savings, thrift and responsible borrowing. With the community institutions taking charge of necessary due diligence and system strengthening, this facilitated the banks to provide credit without incurring high transaction costs.

Next to this is the importance of a community-led approach**.** To combat the challenge of weak banking infrastructure, JEEViKA has promoted a collective access to finance. The nurturing of a pool of community cadre in the form of book keepers and bank *Mitras* helped in extending the reach of financial services to the most vulnerable and needy. This also facilitated faster transactions in the understaffed bank branches.

Last, we have seen that to address the high rates of poverty in Bihar, and the country at large, it is critical to go beyond credit and facilitate the provision of an array of financial services. Under the JEEViKA programme, community members have been exposed not only to credit, but to an entire range of services including insurance, remittances and individual banking.

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Country: India
Region: South Asia
Date: September 2017
Keywords: Financial services; microfinance; women's groups

Project coordination:

Jorge Chavez-Tafur

Editing:

WRENmedia

Layout:

Steers McGillan Eves

Editorial project management:

Bianca Beks

CTA, October 2018

EXPERIENCE CAPITALIZATION SERIES 06

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