‘Strengthening Livelihoods of Rural Households through Natural Resource Management’

A Learning Report

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Summary

Foundation for Ecological Security (FES) with support of the Axis Bank Foundation (ABF) has initiated a project titled, 'Strengthening Livelihoods of Rural Households through Natural Resource Management' (2014-2018) towards improving livelihoods of 60,000 rural households in semi-arid regions of Rajasthan and Karnataka over a period of four years. Understanding the interconnections between social and ecological systems, the role of collective action and ecological health in improving livelihoods and resilience of rural households, the project focuses on three fundamental dimensions of rural life:

- Ecological Restoration: Conserving, restoring, and managing shared natural resources such as forest, land and water.
- Local Governance: Advancing self-governing capacity, secure rights of community on shared natural resources and mobilizing local institutions (village and landscape level) to promote inclusion and participation in collective decision-making.
- Enhanced Livelihoods: Improving the economic opportunities of communities directly dependent on natural resources, the poor in particular, and assisting communities to tailor their consumption of natural resources to suit the ecological capacity of the area.

A mid-term assessment was undertaken in April-June 2017 involving students from Tata Institute of Social Sciences, Tuljapur and Indian Institute of Forest Management, Bhopal to understand changes in household incomes & savings; understand local communities' perceptions of the institutional, livelihood and ecological impact of the project; and identify what is working well and areas for improvement. Qualitative and quantitative research techniques involving ecological health monitoring, household surveys, community based system dynamics and focused group discussions were used to assess socio-economic and ecological changes. The report analyses the impact of interventions undertaken to secure rights of local communities on shared natural resources such as forest, pastures, drylands and water bodies (also referred to as Commons) in combination with measures to strengthen local governance, enhance capacities, and restore degraded and water resources on the livelihoods of rural communities. It aims to understand the key pathways to improve well-being of rural households, particularly that of vulnerable households in dryland contexts without adversely affecting local ecosystems.

Comparison of household incomes collected during baseline 2015 and assessments undertaken in 2017 indicate that the average annual household income has increased from Rs.44,261 to Rs.81,432 over the last two years. One of the most significant contributors to the change in income has been increase in income from livestock keeping and agriculture. This can be attributed to improved local governance, improved access over common lands, and land and water restoration measures resulting in improvements in the soil moisture, water and fodder availability. The assessments indicate that the households annual income has increased by Rs.14,339 due to better returns from animal husbandry and agricultural . In comparison to open access or ungoverned commons, the standing biomass per hectare on an average was 2.6 times higher on common lands under community control (15.79 tonnes per ha in comparison to 6.02 tonnes per hectare)and increase in fodder availability per hectare by 1.9 times (1.39 tonnes per hectare in comparison to 0.71 tonnes per hectare). Annually these improvements in resource base and along with improved access over shared resources provided on an average Rs. 15,779 per household, enabling households to benefit from improved incomes through livestock production and saving costs on purchase of fodder and fuelwood.

With improved agricultural productivity, households are able to save additional amount of Rs.6,375 annually, contributing to the households food security. Improvement in resource conditions has also contributed to improved availability of non-timber forest produce, resulting in an additional income gain of 7,140 per household annually. Similarly, improved agricultural practices is helping the farmers in reducing their cost of cultivation by Rs.2,859. Further, enhanced institutional capacities have also resulted in higher number of people accessing social security schemes and other government programmes. The additional value of benefits generated through better access to programmes and schemes with the support of the project over the last two years is Rs. 7,477.

The assessment highlights the positive synergies offered by social and natural systems, the ability of local communities to collectively manage and self-regulate shared natural resources, role of institutions in improving access to program and services, and increased economic opportunities offered from restored ecosystems. These experiences offer key pathways to address the challenges of small holder agriculture by

- Looking beyond farming as in parcels and address the interconnectedness between the adjoining landscapes and farming system.
- Improved governance of resources through institutional arrangements which appreciate village community (or group of villages) as a unit and its ability to self-regulate shared natural resources.
- Instead of singularly addressing supply side issues of improving production/productivity, intertwine issues concerning demand and bring about discussion and debate on judicious management of resources so as to ensure sustained ecological, social and economic outcomes.
- Synergy among various agencies and enabling linkages between sectoral interests forest, water and agriculture, strengthening institutional arrangement for effective governance and management of resources including production systems such as agriculture and livestock.

1. About the Project

1.1 Context

Rural households, especially poor and marginal farmers, are facing greater vulnerabilities to their livelihoods. These vulnerabilities arise from a combination of social, ecological, market (economic), climatic/environmental and policy factors. Many studies also point out that natural resource dependent livelihood would further face a disproportionate burden of climate change and related shocks.

Some of the key challenges the rural livelihoods face emerge from

a. Degradation of Natural Resources: A major challenge to rural livelihoods emerges from environmental risks. The natural systems of a region – the forests, grazing lands, aquatic bodies, soil, nutrients, biodiversity etc enable various production systems such as agriculture and livestock production which in turn determine the opportunities for livelihoods and incomes for the people of the region. However, degradation of land and water resources has led to adverse economic and ecological consequences in contemporary rural society, where survival, sustenance and growth are intimately linked to the health and productivity of the surrounding natural resources. Recurring droughts and injudicious extraction of natural resources has further exacerbated the risks to faming systems and the dependent rural livelihoods.

b. Neglect of Common Pool Resources: One important component, albeit the most neglected one even in the schemes and programmes that purport to explicitly focus on physical resources, of the rural landscape is collectively used land and water resources. Even after years of degradation, encroachment, privatization and neglect by the state; forests, revenue land, grazing land, community ponds and water bodies continue to play an important role in rural people's lives. Local people depend significantly on these resources for fuelwood, fodder, timber, forage, food, medicines, drinking water for animals and other household requirements. Such dependence is higher in the case of poor, and grows more pronounced during the time of stress e.g. drought, crop failure etc.

c. Unclear tenure rights on Commons: It is widely understood that one of the principal causes of degradation of commons (forests, pastures and water resources) has been the removal of the rights of the communities to use and manage their common resources; and the neglect of the traditional local institutional settings on them. In India, over the last half century, common lands are on the decline by as much as 31 to 35%. The decline can be attributed to the absence or weak tenure arrangements acknowledging the customary rights of communities. Yet communities are the ones who have the knowledge, proximity, and rules to manage these resources effectively. Secure tenure over commons engenders collective action and ensures sustained commitment towards their conservation. Such tenure are also integral to the larger process of building democratic institutions for governance of natural resources.

d. Neglect of community institutions: The village level institutional structure, which is the foundation to effectively manage and govern natural resources, information gathering and dissemination, resource mobilization and allocation, skill development and capacity building, providing leadership and building network with other decision makers and institutions, is often the most neglected aspect in programs and policies. Given the critical dependence of marginalised communities, particularly poor and women, on natural resources for their subsistence need and their general absence in decision making platform, there is a need to work with institutional arrangements with inclusion of all adult members under the institutional ambit.

1.2 Project overview and approach

The project on "Strengthening Livelihoods of Rural Households through Natural Resource Management" aimed to improve natural resource based livelihoods of 60,000 rural households across 1200 habitations in 12 blocks of the semi-arid regions of Karnataka and Rajasthan over a period of four years. The project focuses on three important components of rural life:ecological restoration, local governance and livelihood improvement. It aimed to benefit the households through increase in income, improvement in availability of biomass and water, improved productivity of agriculture and livestock and better access to government programs

and services through formation and strengthening of community institutions and building cadre of Community Resource Persons (CRPs).

In contrast to most of the contemporary initiatives on livelihood promotion that do not take into account the interconnectedness of social and ecological systems in designing livelihood development pathways, the project aimed to highlight the principles and practices of designing natural resource based livelihood options that are ecologically sound and economically rewarding. These includes

- Engaging with local communities in better understanding the ecological underpinnings of rural production systems, the myriad social-ecological conditions they point to, and the ways in which they can contribute to livelihoods of rural communities.
- Organizing and strengthening habitation level institutions such as the Village Forest Protection and Management Committees (VFPMC), Charagah Vikas Samitis (CVS), and Tree Growers' Cooperative Societies (TGCS) and Women's groups for improve management of natural resources, increased production and establishment of appropriate linkages for the marketing of the produce.
- Arranging for secure tenure of local communities over forests and commons to promote collective action, ensure sustained commitment of communities to conservation and build democratic institutions for governance of natural resources.
- Building local capacities to develop and manage local resources on a sustainable basis and improve service delivery by developing a cadre of Community Resource Person (CRP) with expertise in areas such as agriculture, horticulture, forestry, livestock management, micro-enterprise development and micro finance.
- Supporting habitation level institutions in undertaking appropriate soil and moisture conservation, and regeneration activities to rehabilitate forests, pastures, farmlands and water bodies.
- Design interventions for improving livelihoods which reduces the impact of key threats to agrarian livelihoods and enable conditions that incrementally provide better income streams from the present livelihood options.
- Facilitate formation and/or strengthening of women's SHG with an emphasis on converging services, developing access to micro credit, promoting micro enterprises, establish forums for women to meet and interact, gain and share information, and identify common interests for collective action.
- Building collaborations and promoting institutional partnerships (public-civil and private institutions) and engagement between different actors to leverage opportunities, government programs, and access to information.

1.3 Project Objectives

a) Improve rural livelihoods of small, marginalized and landless households through improvement in natural resource base, increased returns from agriculture and livestock and improved access to social security schemes.

b) Improve local governance of natural resources and dependent livelihoods by formation and strengthening habitation level institutions.

c) Improve availability of biomass (fuel wood, fodder and Non Timber Forest Produce) and water through conservation and restoration of common land, farm lands and water bodies.

d) Train and build a cadre of Community Resource Persons (CRPs) to strengthen local stewardship and improved delivery of government programs.

e) Leverage different government programs like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), National Rural Livelihood Mission (NRLM), Rashtriya Krishi Vigyan Yojna (RKVY) and other social security schemes to create productive assets for improving rural livelihoods.

f) Craft and strengthen Self Help Groups (SHGs) to improve collective action, access to capital, information and income generation schemes.

1.4. Project Area characteristics

The project area is spread across 1200 habitations in 12 blocks of the semi-arid regions of Karnataka and Rajasthan. The area is characterized by dryland mixed farming systems, with high vulnerability of livelihoods, degraded natural resources and preponderance of common lands.

Table 1: Fact Sheet of Project Locations		
Indicators	Karnataka	Rajasthan
Population	61,130,704	68, 621, 012
% of population living below poverty line	25	22
% of Schedule Caste and Schedule Tribes	20	19
Mean annual rainfall (mm)	750	450-850
% of common land other than forestlands	30.29	52.2
% of forest cover	8.24	3.42
Principal crops	Groundnut, Paddy, Chilly, Tomato and Mango	Maize, Jowar, Mustard, Wheat, Groundnut
Total common land under protection (ha)	22,589	38, 519

Karnataka

Kolar and Chikkaballapura districts of Karnataka are located in the southern region of the State. The area belongs to Deccan plateau, hot arid eco sub-region. A third of the population belongs to the schedule castes. Economy of the area mainly depends on agriculture. In the absence of perennial rivers, canals, tanks and due to lack of the shallow groundwater aquifer, the area depends mostly on ground water through bore well irrigation. The intensity of cash crops like paddy, vegetables and tomato is high in both the districts and traditional crops such as groundnut and Ragi is decreasing.

The cropping pattern and the persistence of irrigation in summer indicate the over abstraction of groundwater in the area. Migration is the common phenomena over here as a source of seasonal livelihood to nearby urban area.

Figure 1: Map of project locations in Karnataka

Rajasthan

The work in Rajasthan covers the five districts of Rajasthan. While Bhilwara is largely dominated by non-tribal population, as much as 90% of the population in Udaipur is tribal, with Bhils and Garasiyas being the predominant communities. Meena tribe dominate the population in Pratapgarh with more than 90%. Pali district has a population density of 165 inhabitants per square kilometer, has 1012 villages and 320 Gram Panchayats. Chittaurgarh district has a population density of 193 inhabitants per square kilometer and is divided into 10 blocks.

The economy is principally a mixed farming system across the three districts with households depending on rain fed agriculture complemented with animal husbandry. Apart from agriculture and animal husbandry, there is a high dependence on wage labor and migration to neighboring towns. The second crop is dependent on residual moisture and areas around the wells recharged through the water harvesting structures and drainage lines.

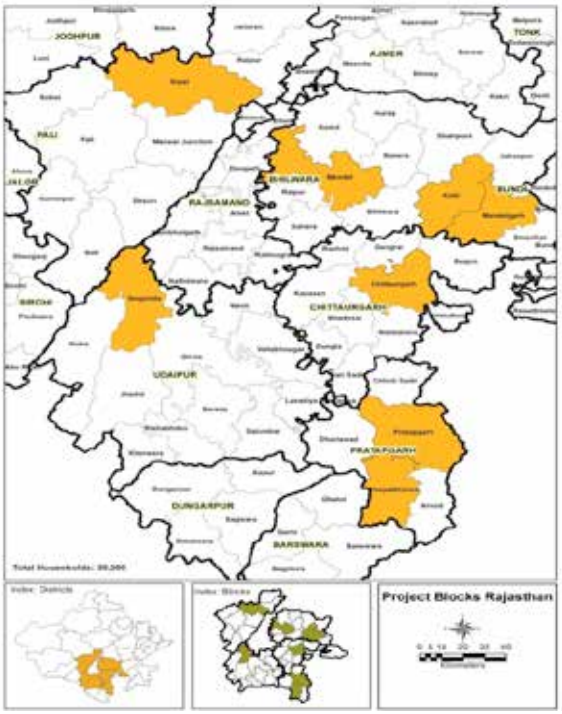

Figure 2: Map of project districts in Rajasthan

1.5. Expected Outcomes of the Project

i. Quantitative

a) Improved forest and vegetation cover on 24,000 acres of forest, pastures and other common lands.

b) Increase in income of 50,000 household (approx. 85%) by 40 - 50% in four years through

- Promotion of basket of farm and nonfarm based livelihood activities which will help in diversification of livelihood portfolio thus reducing vulnerability and risk.
- Increase in double crop area (approx. 20%) through renovation of around 2000 water harvesting structure, farm ponds, village tanks, anicuts etc and accompanying soil and moisture conservation activities.
- Increased availability of fodder for around 6 months (from current availability of 2 to 3 months) from forest, pastures and grazing lands and thereby improving milk production.
- Reduction in livestock keeping cost by 30% due to increased availability of fodder and water.
- Reduction in expenses towards purchase of fuelwood and fodder through restoration of commons.

c) 50,000 members from habitation level institutions and Self Help Group trained for improved livelihoods, governance and natural resource management.

d) Leverage Rs. 22.40 crores for village level activities through different government programmes of the State/Central governments and agencies like NREGS, Integrated Watershed Development Programme (IWMP), Rashtriya Krishi Vikas Yojana (RKVY), and National Rural Livelihoods Mission (NRLM) and Tribal development projects.

e) Formation and strengthening of more than 3600 SHGs with close to 40000 members and savings worth of Rs. 4.5 crores generated across four years.

ii. Qualitative

a) Strong and robust institutional arrangements in 1200 habitations for local governance of natural resources.

b) Trained cadre of 200 Community Resource Persons (CRPs) for effective implementation of developmental program.

c) Increased representation and involvement of community members especially of women and deprived groups in planning and execution of the developmental schemes.

d) Mechanisms for resources use or allocation from forest, land and water which are pro-poor.

e) Improved collaboration and institutional partnerships between different actors and institutions leading to improved access to resources, information, institutions and better service delivery.

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2. Mid-Term Assessment of the Project

The project aims to improve livelihoods which is being measured through increase in income, improvement in availability of biomass and water, improved productivity of agriculture and livestock and better access to government programs and services through formation and strengthening of community institutions and building cadre of Community Resource Persons (CRPs).

Mid-term assessment was undertaken in April-June 2017 to:

a) Track changes in household income and savings due to the various initiatives supported through the project over the last two years;

b) Understand local communities' perceptions of the institutional, livelihood and ecological impact of the project, identify what is working well and areas for improvement.

c) Highlight the interconnections between collective action, ecological health and livelihoods.

Table 2: Sampling Frame for Mid Term Assessment	
Household survey	▪ Sample size - 10% of total households across 42 villages in four landscapes differentiated based on agro ecological conditions and proximity of Blocks ▪ 300 households per landscape – 70% (Year 1 HHs) & 30% (Year 2 HHs) ▪ Number of households surveyed per block in proportion to number of households covered under the project across both the years ▪ Random selection of households within habitation
Ecological assessment	▪ 39 sites ▪ Comparative assessment of changes in fodder, fuelwood, biomass and carbon stock in managed and unmanaged common lands
Institutional assessment	▪ 4 SHGs and 4 Village Institutions per landscape
Mind mapping and case studies	▪ Habitation basis

Methodology

A team was built comprising of FES team and 9 students from Tata Institute of Social Sciences, Tuljapur and Indian Institute of Forest Management, Bhopal to undertake the assessment. Training was conducted for the Community Resource Persons' as well as students before the initiated field work to make them familiar with the project interventions and the assessment protocols. Data for the household level assessment was collected through household survey covering 1134 households in Kolar, Chikballapur, Bhilwara, Chittaurgarh, Udaipur and Pratapgarh.

The data collected for the midterm assessment was compared with baseline data collected of the same households in 2014-2015 to monitor the changes in the last two years i.e. since the project intervention. The analysis was done across four landscapes in both the States based on similar agro-ecological and socio-economic conditions. For each landscape, ~300 households were selected across 12 habitations. The number of households to be surveyed in each block were selected in proportion to the number of households covered in those blocks under the project. Of these selected households 70% of the households were taken from year 1 and 30% from year 2.

Household survey: captured the information on income & expenditure of the household, crop yield, livestock productivity, details of government schemes & programs. The analysis has been done with ~10% sample from the total households, (12,648) reported to ABF as of April 2016. In addition to the survey, qualitative data was collected through focussed group discussions, transect walks, interviews with beneficiaries and mind maps. The collected data was analysed by to understand changes in the livestock population, crop yield, income & expenditure, the functioning of institutions among other variables.

Institutional Survey: Members from four SHGs and four Village Institutions per landscape (i.e., 8 per state and 16 in total) were interviewed to understand the impact that the project has had on the institutions of the villages. This helped in reviewing the: participation of disadvantaged groups in institutional process, monitoring and sanctionig mechanism, appropriation and provisioning rules, savings, cohesiveness, and the role that village institution and SHGs have played in improving livelihoods, investments and linkages with social security schemes.

Ecological assessments: were undertaken in 39 sites to capture changes in grass biomass, standing biomass and carbon stock. Comparative assessments were made of the biomass in common lands being managed by the local communities with those that do not have rules and regulations for management.

3. Learning

3.1. An Overview

The livelihood development pathway proposed under the project (Figure 3) recognizing the interconnections between social and ecological systems, focuses on three important components of institutions and capacity building, restoration of Commons, and access to services, information and capital. It builds on the principle that community institutions play a fundamental role in mediating human nature interactions, improving access to information and capital and in shaping coping strategies at household and community level. Alongside the processes of institutional strengthening, improving systemic drivers such as soil, moisture, nutrients, biomass and biodiversity by working on forest-land-water continuum can help in improving the health of ecosystems and increasing resilience and well-being of rural households. Improved institutional base, capacities and restored ecosystems enable households to further invest in measures to improve productivity, adopt better practices, increase their asset base and use the saving through self-help group in more productive ways.

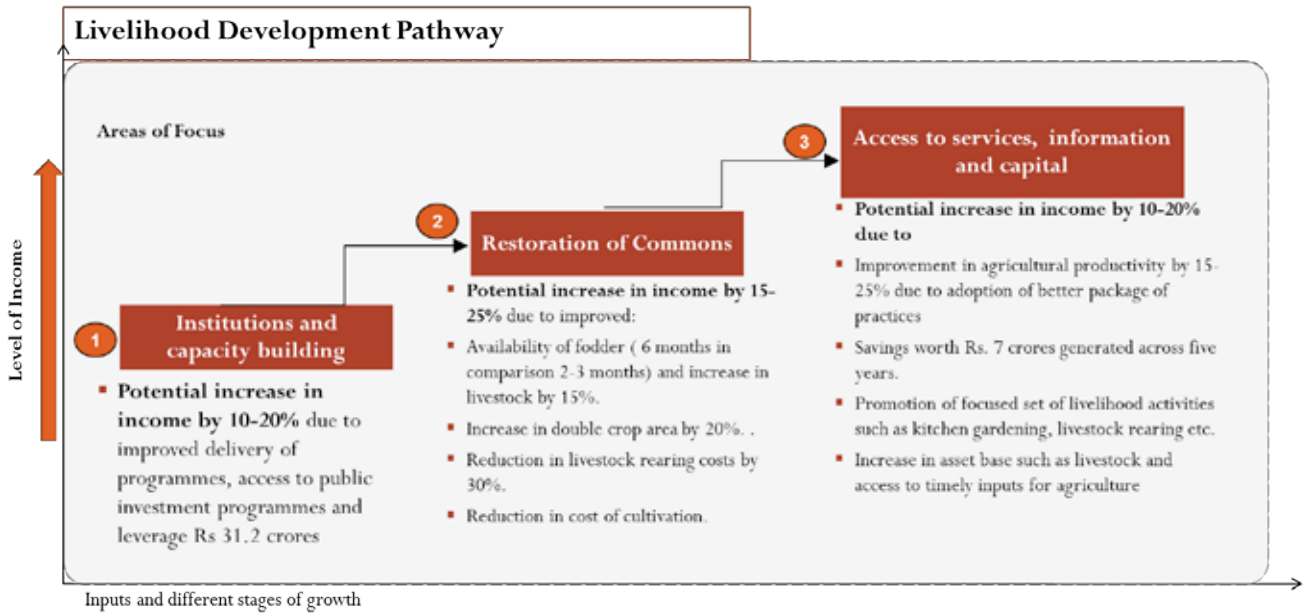


Figure 3: Livelihood Development Pathway

Comparison of household incomes collected during 2014-15 and mid-term assessments (2017) indicate that the annual household income has increased from Rs.44,261 to Rs.81,432 over the last two years. One of the most significant contributors to the change in income has been increase in income from livestock keeping and agriculture. This can be attributed to improved local governance of land and water resources and restoration measures resulting in improvements in soil moisture, water and fodder availability. Enhanced institutional capacities in accessing timely inputs for agriculture and livestock from government departments and other institutions, and promotion of sustainable agriculture and livestock keeping practices have further contributed to the increase in returns from farm.

Mid-term assessments indicate that on an average the households annual income has increased by Rs.14,339 due to improved livestock and agricultural productivity. With improved agricultural productivity, households are able to save additional amount of Rs.6,375 annually, contributing to the households food security. In addition, adoption of improved agricultural practices is also helping the farmers in reducing their cost of cultivation by Rs.2,859. Improved resource condition on common lands due to community protection helped increase the fodder availability per household by Rs 5,109 and the availability of fuelwood & other biomass (for fencing, thatching etc) by Rs 5,646 per household. Overall these resource benefits save annually Rs 15,779 per household in terms of fodder and fuelwood expenses. Improvement in resource conditions has also contributed to improved availability of other non-timber forest produce (fruits, broom-sticks etc.) resulting in an additional income gain of 7,140 per household annually.

Table 3: Additional Income and Savings from Different Sources due to Interventions			
Sources	Income / Savings (in Rs)	No. of households benefitted (in the sample)	% of total sample
Additional income due to improved agricultural productivity	9411	499	44
Additional income due to increase in livestock	4,928	428	38
Improved availability of fodder	10,133	748	66
Improved availability of fuelwood and other biomass	5,646	624	55
Additional income due to sale of other NTFPs	7140	282	25
Additional benefits due to better access to programmes	7,477	632	56
Additional savings due to reduced cost of cultivation	2859	248	22
Additional savings due to better availability of food grains	6,375	390	34

In the next section, we highlight some of the key intervention strategies and changes across the three focus areas of institutions and capacity building, restoration of Commons and access to services, information and capital.

3.2. Institutions & Capacity Building

Intervention strategies

Over the last two years, the project has supported in formation and strengthening of nearly four hundred village institutions across the project area. The institutions are organized at the habitation level (which is the lowest socially cohesive unit in rural landscapes) and build on principles of universal membership including all adult men and women in the habitation as its members. The village institutions are entrusted with the responsibilities of (a) ensuring equitable benefit sharing of resources among the members, (b) regulating resource use within the ecological threshold limits, (c) monitoring functioning of Self Help Groups and other user based groups in the habitation (d) managing revolving fund at the habitation level, and (e) approving and overseeing natural resource management based income generation activities.

The institutions are supported in claiming and securing collective tenurial rights over common lands and water bodies, evolving specific byelaws for resource governance, and developing plans for resource rejuvenation and livelihood improvement. A key strategy for supporting institutional development processes has been that of enabling local capacities and building local cadre of community resource persons. A cadre of nearly seventy community resource persons has been built to assist the rural households and village institutions in planning at village and household level with specific focus on resource rejuvenation and livelihood improvement, in supporting individuals/households in adoption of package of practices for sustainable production systems, and in improving access to programmes and schemes.

Impacts

Institution and capacity building efforts undertaken with the support of the project has led to an overall improvement in the functioning of village institutions over the last two years. This manifests in higher participation of men, women and youth in the village meetings, secure rights and access to resources, enhanced capacities of village institutions to resolve conflicts, to liaison and negotiate with Panchayats / external actors. Village institutions along with the cadre of community resource persons have also been playing a central role in improving access of individuals/households to programmes and schemes for financial inclusion, wage employment under MGNREGA, asset development (low cost housing, construction of cattle sheds, toilets), skill enhancement, pension and insurance schemes.

- 94% of the households surveyed during the mid term assessment shared that village institutions and community resource persons helped them in accesing programmes and schemes.
- The average value of benefits that the households have gained due to improved access to programmes is Rs.7,477.

- 44% of the households shared improvement in access and more secure rights to resources due to improvement in the governance of common lands over the last two years.
- 59% of the households shared that with stronger village institutions they are able to access timely inputs for agriculture and livestock keeping.

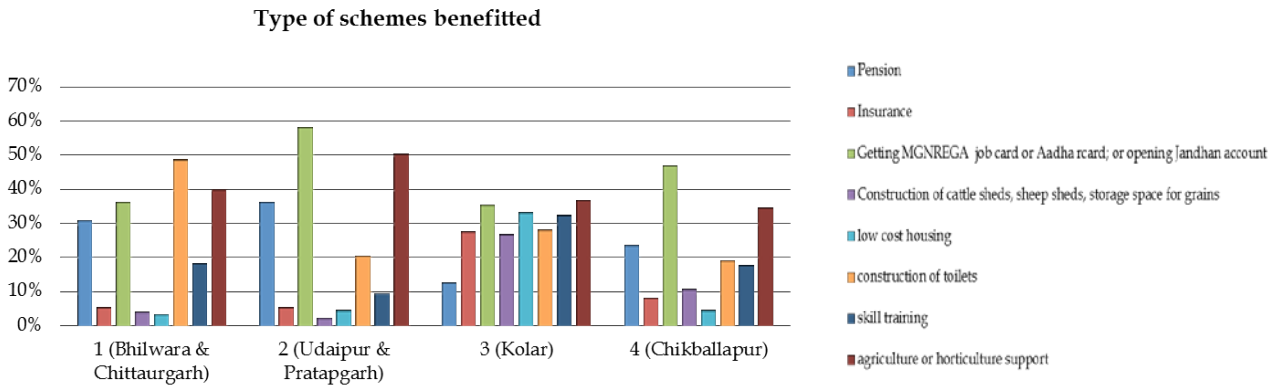


Figure 4: Types of Schemes Accessed

Case Study: Support to avail Social Security Schemes

Magilamma, an old woman, belongs to Pathurgadda village in Mudimadugu Gram Panchayat of Srinvaspura Taluka in Kolar district, Karnataka. She works as an agriculture laborer in others' farms to meet her daily needs. In the year

2014, her husband passed away and she does not have any one else in the family. Initially, when her husband was alive, they used to do agriculture in their own one-acre land. Now as she is old and her husband passed away, she is left with no assistance to carry agricultural activities on her own. She fulfills her daily needs only through the agriculture labor she does in others' farms and the monthly ration she gets on her ration card. She gets agriculture work only for 4 months in a year at the time of the cropping season and earns 200 rupees a day in those 4 months.

Once, in a Village Development Committee (VDC) meeting that she attended, she asked the VDC members to help her get the old age pension. When the Community Resource Person (CRP) of her village contacted her regarding this, she responded, ''I do not know anything about how to get a pension, so you please help me to get the pension.'' The CRP took her Aadhar card, Voter card, Pan Card and her photograph and went to the ''Atalji Jansnehi Kendra (AJSK)'' and brought her the pension application form and filled all the details on behalf of her. He took her signature and went to the AJSK, which is at Ralyalpadu of Srinivaspura taluka and filled the online application for the old age pension on her name under the 'Sandhya Suraksha Yojana' of the Karnataka state government. He did the continuous follow-up of the status of her application for forty days until her pension got sanctioned. Her monthly pension was sanctioned in November 2016. She now receives 500 rupees per month as pension under the 'Sandhya Suraksha Yojana' of the Karnataka state government.

"I do not know anything about how I got pension and all; Narayanaswamy (CRP of her village) did all the necessary work and told me that pension has been sanctioned to me,'' she informed.

"I'm old, my husband has passed away, and I have no children to look after me. The pension money and the daily wage I earn are the only way to get through my day," she concluded.

3.3. Restoration of Commons

Intervention strategies

The efforts towards restoration of Commons focus on three key strategies. These include (a) supporting village institutions in securing rights and formulating byelaws for protection and conservation of Commons, (b) influencing public investment under programmes such as MGNREGA for land and water rejuvenation works, and (c) improving information and discussions at community level on the local ecology and threshold limits.

Over the last two years, the project has supported in channelizing an investment of more than four crores under MGNREGS for developing and restoring assets such as common lands, farm lands and water bodies that play a central role in strengthening rural livelihoods. Efforts have been to improve the functioning of MGNREGS through community mobilization and creation of job demands, skill enhancement of MGNREGA mates and local cadre, improving participation of local communities in planning, execution, monitoring of MGNREGS works and increasing their stake in the management of assets created in the long run.

Impact

In comparison to open access or ungoverned commons, the standing biomass per hectare on an average was 2.6 times higher on common lands under community control (15.79 tonnes per ha in comparison to 6.02 tonnes per hectare)and increase in fodder availability per hectare by 1.9 times (1.39 tonnes per hectare in comparison to 0.71 tonnes per hectare). Annually these improvements in resource base provides on an average Rs. 15,779 per household enabling households to benefit from improved incomes through livestock production and saving costs on purchase of fodder and fuelwood.

Table 4: Key changes in ecological condition and benefit per household	
Standing biomass (tonnes/ha) in community protected areas	15.79
Standing biomass (tonnes/ha) in ungoverned commons	6.02
Available fodder (tonnes/ha) in community protected areas	1.39
Available fodder (tonnes/ha) in ungoverned commons	0.71
Improved availability of fuelwood and other biomass (for fencing and thatching(INR/household)	5646
Value of available fodder (INR/ household)	10133
Value of additional fodder (INR/ household)	5109

Improved local governance of shared natural resources supplemented with bio physical measures have helped in improving the resource base resulting in improved soil and moisture regime and reduced soil erosion, improved availability of fodder, fuelwood and non-timber forest produce, longer duration of stream flows and water in water bodies, increase in water column in the nearby wells.

- Ecological assessments indicate that better management and regeneration of common lands has contributed to additional grass biomass production that can be estimated to be contributing to additional saving of Rs.5,109 by a household annually on fodder procurement.
- Rules such as ban on felling trees and collection of only dry wood for fuelwood uses have also helped in increasing the standing biomass. Estimates suggest that on an average a household is able to make an additional saving of Rs.5,646 due to improved fuelwood availability.
- Household surveys indicate that improved NTFP availability has helped 25% of the households in gaining additional income of Rs.7140 on an average annually.
- Households benefitting from improved fodder and water availability shared that their fodder availability has improved by about 2 months while water availability has improved by about 1.5 months.

Strengthening Livelihood through Pasture Land Development

Narsinghpura, a village located in Madhopur Panchayat in Begun tehsil of Chittorgarh district has population of around 660 inhabited primarly by the Dhakad, Rebari, Bheel, Vaishnav and Bairwa. Agriculture and animal husbandry are the primary source of livelihoods; however, many households are also dependent on local wage labor for their livelihood. The village has 360 bighas of pasture land or ***charagah*** which traditionally had open access and free grazing was the common practice. Due to this the plantations in the pasture were damaged and non-timber forest produce was negligible. The village institution with support of the project demarcated the pasture land and constructed a boundary wall around it through MGNREGA. The village institution also established rules to prevent the common land from being encroached, manage grazing practices, and put a ban on cutting trees. This has helped in regeneration.

Sohini Bai, a 60-year-old women from ***Bhil*** (tribal) community is engaged in collecting ***ber*** from pasture land for past many years. Earlier she used to earn around Rs.500-1000 by selling ***ber.*** But this time she made a profit Rs.20,000 by just selling ber collected from the pasture land. She got prices as high as Rs.20/kg because not only the quantity but also quality of the ***ber*** has improved significantly.

"Sidhi si baath hai. Janwar ja ke sabh pedh kharab kar dethe hai, ab uspe rok lag gayi tho pedh paudhe ki sehat bhi achi ho gayi aur munafa bhi"
(Animals used to destroy all the plant in pasture land. Now that their entry is restricted, plant's health is improved and so is the profit), remarked Sohini Bai.

3.4. Access to services, information and capital

Intervention strategies

Recognizing the criticality of access to information, services and capital in strengthening livelihoods and resilience of rural households, the project has supported various initiatives to improve this. The key strategies designed for improving access to services, information and capital include (a) formation and strengthening of Self Help Groups to improve inclusion, participation, and access to capital, (b) promotion of sustainable agricultural practices such as seed treatment and seed replacement, line sowing, mixed cropping, application of non-chemical pesticides, horticulture, fodder and vegetable cultivation through a trained rural cadre, (c) supporting animal husbandry through breed improvement, organizing animal health camps to reduce mortality and improve livestock health, assisting livestock keepers in accessing government programmes and schemes for construction of cattle sheds and getting their livestock insured.

Impacts

Savings and capital - 562 Self Help Groups have been formed and are being strengthened with the support of the project. The most immediate impact that can be seen is in terms of a practice of saving being developed amongst the members. Savings worth Rs. 3,016,792 has been generated through SHGs over the last two years and the SHGs have been linked to Banks. The members have also started taking loans for consumptive and productive purposes that has helped them in having better access to health and education, organizing social functions, purchasing assets such as motorbikes (to improve their mobility), purchasing inputs and assets to support agriculture and animal husbandry. Some of the SHGs have also started group based enterprise.

Agriculture

Land and water rejuvenation initiatives have helped in checking water run-off and soil erosion, and improving the soil moisture regime and water available resulting in increase in cropping area and crop yield. Simultaneously, adoption of improved agricultural practices such as line sowing, and application of jeevamrut / amrit paani, has helped the farmers in reducing the cost of cultivation. Varietal and crop changes (particularly in groundwater distress landscapes) have helped in reducing water use as well as saving costs in pumping water.

- Average increase in income per household due to additional production subsequent to the area treatment and water harvesting initiatives is Rs. 9,411. Agricultural input costs saved per household due to adoption of improved agricultural practices is Rs. 2,859 on an average.

- Agricultural practices such as inter-cropping and bund cropping helped the farmers in mitigating the impact of excessive rain (in Northern landscapes) and drought (in Southern landscapes).

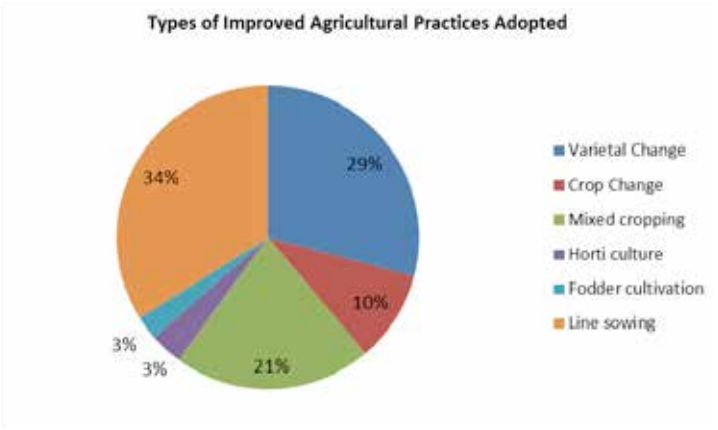


Figure 5: Types of agricultural practices adopted

- Promotion of vegetable cultivation and horticulture in forest dominated tribal landscapes of Udaipur and Pratapgarh has helped in diversifying their livelihood besides addition to their household's food nutrition. Average increase in income per household's due to vegetable cultivation is Rs. 9,361.

Livestock

77% of the total sampled households keep livestock. Of those who keep livestock, 49% shared that there has been an increase in the number of livestock they own. A higher increase can be seen in case of small ruminants as compared to large ruminants. Out of the 314 households who did not own any livestock in the baseline, 42% (out of the 28% who did not own any livestock in baseline) have started keeping livestock indicating an increase in the household's productive asset. Primary reasons for increase in livestock over the last two years as shared by the communities include improvement in natural resource base and agriculture, better access to schemes and support for buying livestock, improvements in household income. Average increase in income from livestock and livestock products is Rs. 4,928 over the last two years.

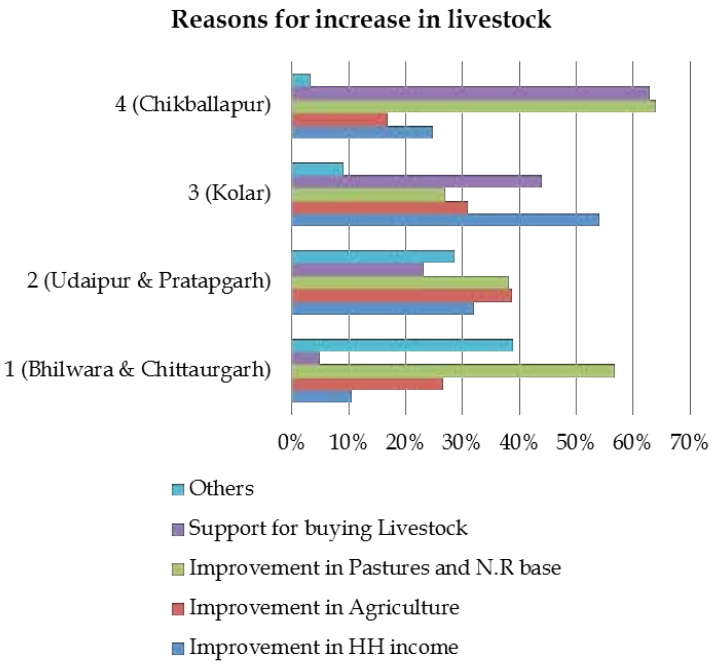


Figure 6: Reasons for Increase in Livestock

This is higher in case of Kolar and Chikkaballapur that has higher proportion of large ruminants and better linkages with Dairy and market. Positive trends in livestock sector give an insight into the diversification of livelihood sources. While there could be several factors contributing to this including access to marker, government interventions etc., the projects support has been in terms of improving the institutional linkage so that the livestock keepers are able to access government programmes and schemes and improved veterinary care, and improving availability of good quality fodder for the livestock.

3.5. Impact on Annual Household Income

Comparative assessment of annual household income at baseline and mid-term indicate that the average income has increased from Rs.44,261 to Rs.81,432. Analysis of the data however shows that the standard deviation from mean is very high which indicates that comparative assessment of average incomes might not be accurate. Therefore, median of the incomes were calculated and compared. Median income has increased from 20,145 to Rs.49,500 indicating a two fold increase in the income over the last two years.

Table 5: Changes in Number of Households in Different Income Categories						
	Baseline	Mid Term				
Income range	No. of households	In %	Average income	No. of households	In %	Average income
0-12,000	352	31%	5,666	87	8%	7,658
12,001-36,000	403	36%	21,251	325	29%	23,395
36,001-60,000	143	13%	46,427	200	18%	46,964
60,001-84,000	83	7%	69,874	149	13%	71,110
84,001-100,000	34	3%	91,507	71	6%	92,722
Over 1,00,000	119	10%	2,09,632	302	27%	2,01,661

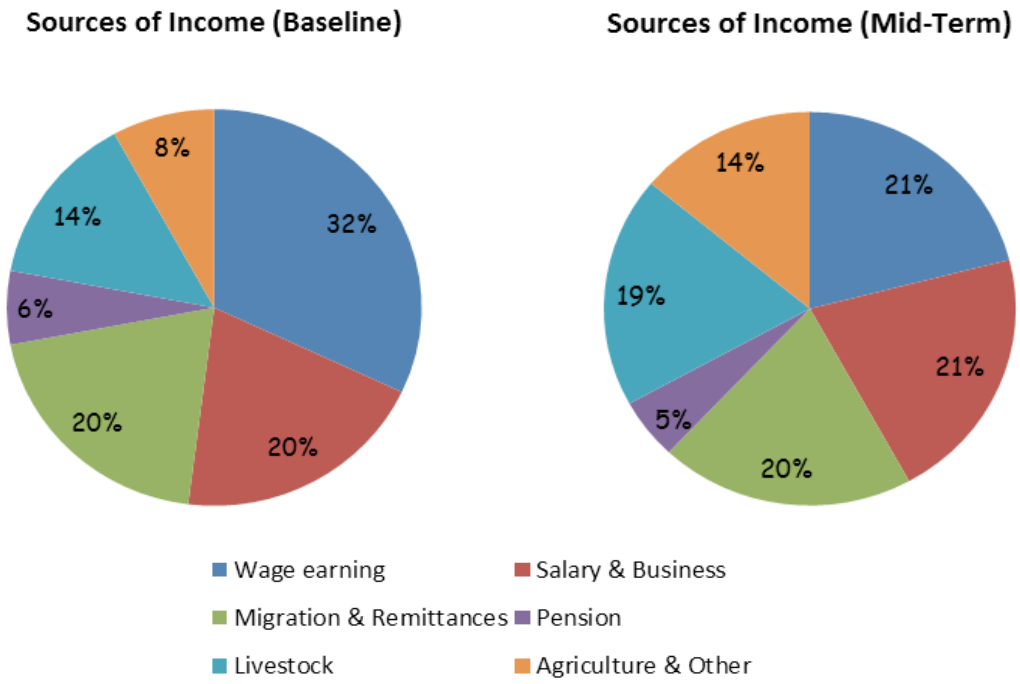


Figure 7: Changes in contribution of different sources to annual household income

Analysis of income data of people in various income groups also indicates positive trends such as lesser number of people in the income range of less than 12,000 and significant increase in number of people in the income ranges of more than fifty thousand and one lakh per annum. Changes can also be seen in the livelihood portfolio of the households with a shift from wage earning to income from livestock. There has also been a significant increase in contribution of income from agriculture, sale of minor forest produce, horticulture and floriculture over the last two years.

4. Annexure

Community Testimonies

“Previously everything was done verbally. But now with the documentation of discussions in the Register, the next generation will find it easier to take decisions. They can refer back to the Register if they come across any problem, and take a fair decision. No difference will be made between the rich and poor.”

Ambalal, Joda Mahuda, Pratapgarh

“With the help of the village institution, we have been able to convince people to stop marrying their children at 10-12 years… Alcoholism has been another major problem in our village and men end up beating their wives. So all of us went to the Tehsildar, did a gherabandi and pushed him to put a ban on alcohol within one month”

Members of the Gayatri Samuh, and Chamunda Samuh, Thana, Bhilwara

“I always wanted to rear sheep of my own. I like feeding them and it makes me happy. But I did not earn enough to have a sheep of my own. With the support of the VDC (Village Development Committee), I have been able to purchase sheep of my own. I already have so many debts and do not want to increase it further. By rearing sheep and increasing their number I can secure my livelihood in the long run. I will rear the sheep with proper care and after the sheep increases to a few more, I will sell a sheep and put some more money on my own to also buy a cow next year.”

Narayanamma, Thyavanahalli, Kolar

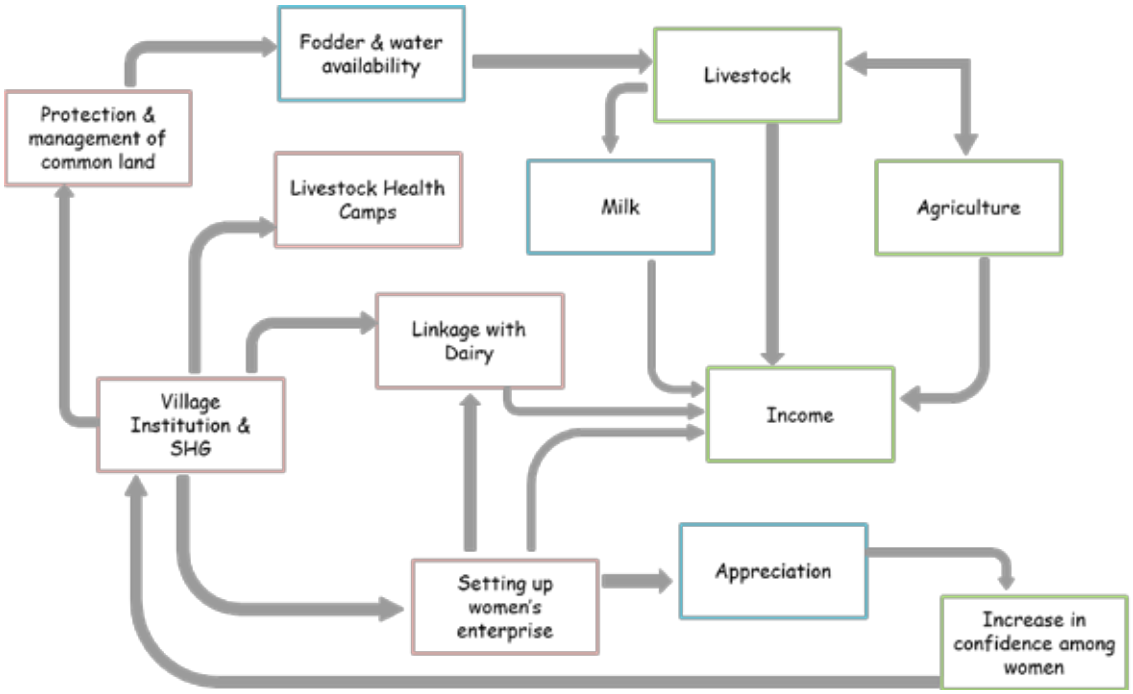
“Now I do not need to buy fodder for my Cows. I feed them with fresh grass grown in my field due to which the milk production has increased. Now I am getting more profit as my fodder expense is saved and milk production is also more.”

Umesh, Thollapalle, Chikkaballapur

“SHG acts as a common place for us to come together, save money and help each other in need. Using money of my SHG is like using our own collective money. We talk about various issues. Being in an SHG gives us a sense of confidence and security as I have my group to share my problems, opinions and thoughts..”

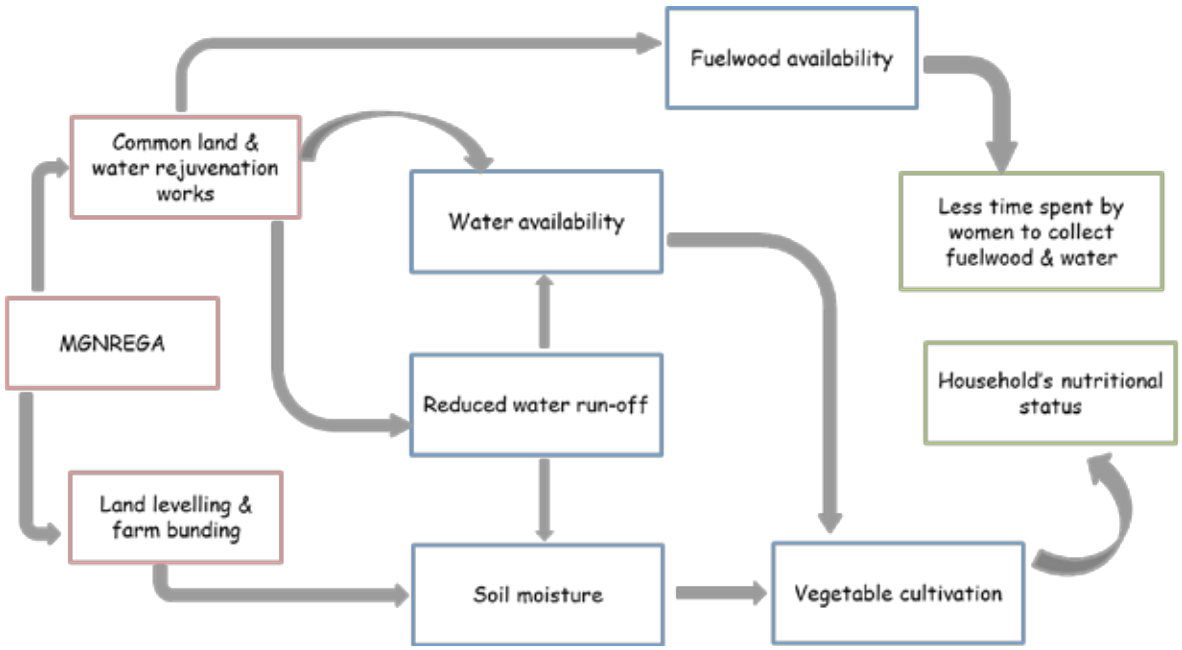
Nagalakshmi, Thyavanahalli, Kolar

Community Mind Maps



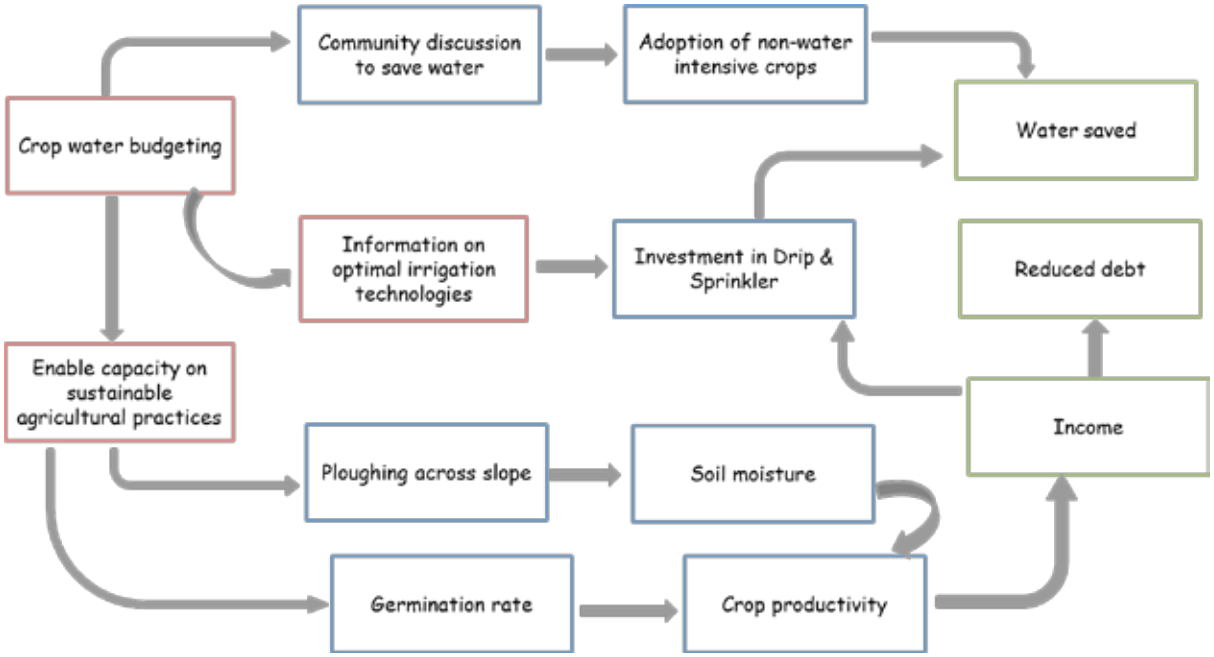
Dhapda, Bhilwara

During the mind mapping exercises undertaken with the village communities in Dhapda village in Bhilwara, they shared that support in strengthening institutions and restoration of common lands has contributed to higher income from agriculture and livestock due to better fodder and water availability. Organizing livestock health camps and facilitating linkage with Dairy has also helped in higher returns from livestock. The complementarity of livestock and agricultural production systems has thereby increased. Simultaneously, supporting the women in setting up group based enterprise and linking them with Dairy has enhanced income earned by women and earned them appreciation by others in the village, which has increased their confidence and resulted in more inclusive functioning of the village institution.



Reechwara, Udaipur

Common land and water rejuvenation works supported through MGNREGA has contributed to improved fuelwood and water availability, thereby reducing the time spent by women to collect fuelwood and water. Restoration of commons supplemented through private farm bunding has also contributed to improved soil moisture and water availability enabling the farmers to grow vegetables and improving households' nutritional status.



Chikkaballapur

Using tools such as crop water budgeting, improving information on optimal irrigation techniques and enabling capacities on sustainable agricultural practices has brought in behavioral changes in the farmers resulting in adoption of non-water intensive crops and investments in drip and sprinkler technologies. Adoption of sustainable agricultural practices has also led to improved soil moisture and enhanced crop productivity. The results of the initiatives can be seen in terms of improved incomes, reduced debts and water savings which is particularly significant in the context of this water stress region.

Landscape wise assessment of perceived changes due to the interventions

Institutions and capacity building

Perception of households regarding changes in the functioning of village institutions over the last two years due to project interventions							
Landscapes	Poor		Good		Very Good		Total
	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	
Bhilwara & Chittaurgarh	30	11	173	63	73	26	276
Udaipur & Pratapgarh	59	22	149	56	58	22	266
Kolar	36	12	234	80	21	7	291
Chikballapur	33	11	194	64	74	25	301

Perception of households regarding reasons for improvement in functioning of village institutions										
Landscapess	Better governance of Common lands		Imrpoved participation and better decision making		Increased bene-fits(Fodder and Water)		Inputs and other Support for Agriculture and Livestock		Better delivery of Government programmes and Schemes	
	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	126	24	150	29	94	18	148	29	62	12
Udaipur & Pratapgarh	85	21	104	25	87	21	137	33	61	15
Kolar	66	16	126	30	78	19	149	36	57	14
Chikballapur	86	20	183	43	23	5	138	32	88	20

Perception of households if their interests are considered by village institution				
Landscapes	No		Yes	
	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	34	12	242	88
Udaipur & Pratapgarh	69	26	197	74
Kolar	75	26	216	74
Chikballapur	53	18	248	82

Perceptions regarding average value of benefits gained due to support in accessing programmes and schemes	
Landscapes	Average value of benefits gained (in Rs)
Bhilwara & Chittaurgarh	7559
Udaipur & Pratapgarh	5175
Kolar	12345
Chikballapur	4732

Perceptions regarding improvement in water availability due to the interventions				
Landscapes	No		Yes	
	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	116	42	160	58
Udaipur & Pratapgarh	135	51	131	49
Kolar	170	58	121	42
Chikballapur	286	95	15	5

Perception of households regarding benefits from Commons due to the interventions												
Landscapes	Improved Access		Water		Fodder		Other NTFPs		Nutrients		Others	
	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	75	29	52	20	116	45	4	2	3	1	5	2
Udaipur & Pratapgarh	106	26	75	18	154	37	68	16	1	0	11	3
Kolar	9	7	20	16	53	42	32	26	2	2	9	7
Chikballapur	3	4	8	11	34	45	29	38	2	3		0

Access to services, information and capital

Purpose of loaning					
Landscapes	Consumptive		Productive		
	in no.	in %	in no.	in %	Total
Bhilwara & Chittaurgarh	15	48	16	52	31
Udaipur & Pratapgarh	35	76	11	24	46
Kolar	93	74	33	26	126
Chikballapur	36	44	46	56	82

Types of improved agricultural practices adopted												
Landscapes	Varietal Change		Crop Change		Mixed cropping		Horticulture		Fodder		Line sowing	
	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	103	48	36	17	12	6	1	0		0	62	29
Udaipur & Pratapgarh	152	56	15	5	7	3	28	10		0	71	26
Kolar	102	22	47	10	112	24	12	3	25	5	171	36
Chikballapur	67	13	44	9	178	36	10	2	12	2	190	38

Perceptions regarding improvement in agriculture due to the interventions										
Landscapes	Increase in productivity		Reduced input-agriculture cost		Enhancement in soil quality		Reduced water consumption		Others	
	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	144	67	16	7	8	4	40	19	7	3
Udaipur & Pratapgarh	162	54	78	26	4	1	55	18	2	1
Kolar	137	47	71	24	52	18	30	10	4	1
Chikballapur	56	33	83	48	15	9	16	9	2	1

Increase in livestock type due to project interventions						
Landscapes	Large ruminants		Small Ruminants		Both	
	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	62	38	44	27	56	35
Udaipur & Pratapgarh	31	21	97	66	19	13
Kolar	28	28	43	43	29	29
Chikballapur	28	31	38	43	23	26

Perceptions regarding reasons for increase in livestock over the last two years										
Landscapes	Improvement in HH income		Improvement in Agriculture		Improvement in pastures and natural resource base		Support for buying Livestock		Others	
	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH	No. of HH	% of HH
Bhilwara & Chittaurgarh	17	8	43	19	92	41	8	4	63	28
Udaipur & Pratapgarh	47	20	57	24	56	24	34	14	42	18
Kolar	54	33	31	19	27	16	44	27	9	5
Chikballapur	22	14	15	10	57	37	56	37	3	2

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