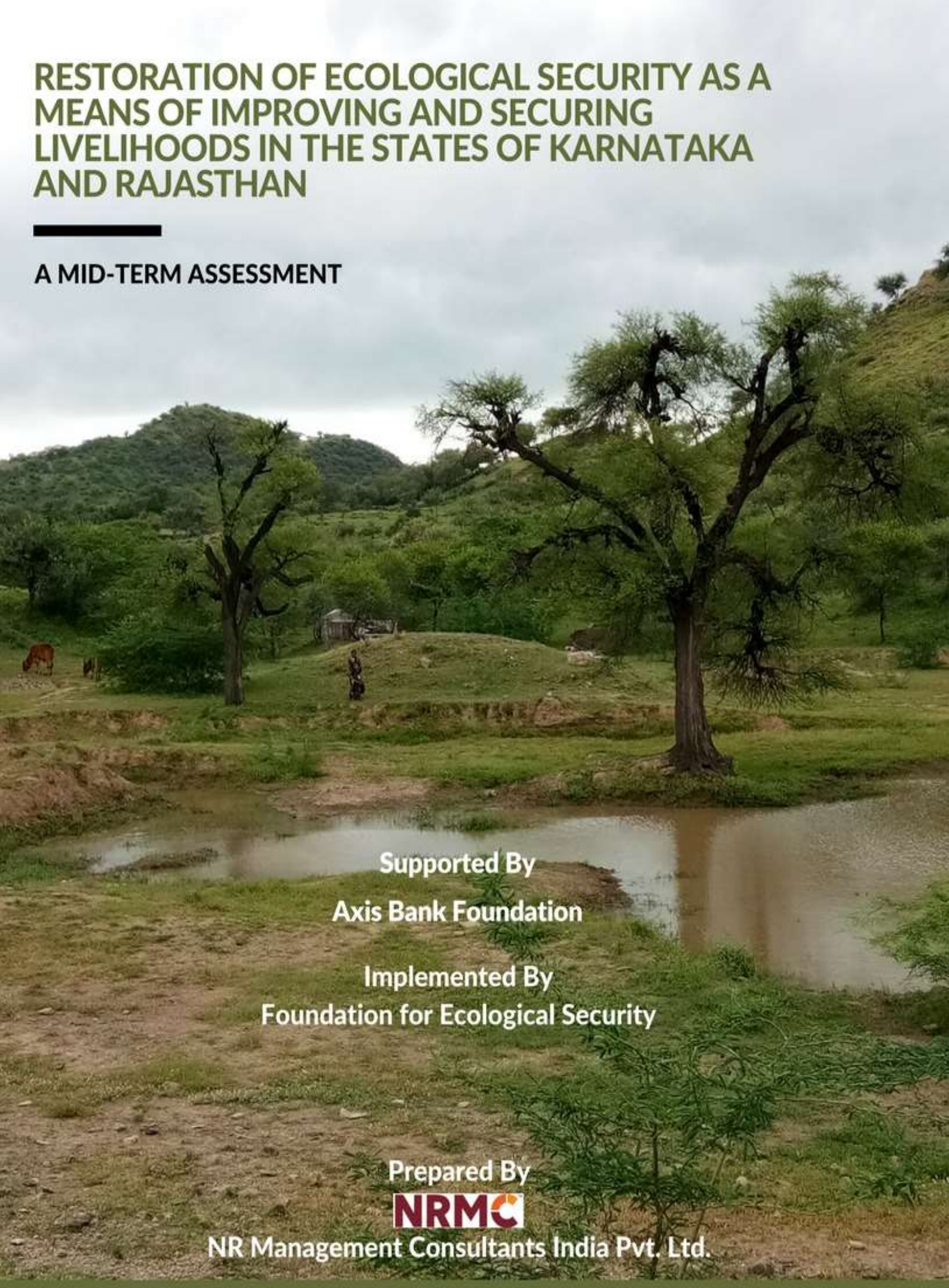
RESTORATION OF ECOLOGICAL SECURITY AS A MEANS OF IMPROVING AND SECURING LIVELIHOODS IN THE STATES OF KARNATAKA AND RAJASTHAN

A MID-TERM ASSESSMENT



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ABBREVIATIONS

ABF	Axis Bank Foundation
APMC	Agricultural Produce Market Committee
CPR	Common Pool Resources
CRPs	Community Resource Persons
FES	Foundation for Ecological Security
FGDs	Focus Group Discussions
KII	Key Information Interview
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NRLM	National Rural Livelihood Mission
NTFP	Non-timber Forest Products
PLA	Participatory Learning and Action
PoP	Poorest of the Poor
RKVY	Rashtriya Krishi Vikas Yojana
SHGs	Self-help Groups
ToR	Terms of Reference
VLI	Village Level Institutions

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EXECUTIVE SUMMARY

Axis Bank Foundation (ABF) has supported Foundation for Ecological Security (FES) for the project "Strengthening Livelihood of Rural Households through Natural Resource Management" through various farm and non-farm interventions for 60,000 households in 12 blocks in two districts of Karnataka and five districts of Rajasthan. The project was initiated in December 2014 with the aim of increasing the household income of the target households by at least 50 percent over baseline over a period of four years.

As the program has now entered its third year of implementation, ABF is keen to undertake a mid-term evaluation to understand the effectiveness of the project interventions and the direction that it is taking in order to address any mid-course corrections. Towards this NR Management Consultants (NRMC) has undertaken a mid-term assessment of the stated project during August and September 2017 to document the processes adopted for the project implementation, examine the effectiveness of the interventions in meeting the program objectives and understand the requirements, if any, of a mid-course change in intervention strategy.

A. CONTEXT

Increasing ecological degradation and adverse effects of climate change impact the livelihoods and well-being of the rural poor first given their high dependence on natural resources. In such a scenario a mainstream livelihood approach, with its focus on surplus generation and profit maximisation alone, discounts the role of ecology in securing livelihoods and that of social institutions in promoting equitable distribution of resources. Hence, emerges the need of a more holistic approach with a focus on ecological and social sustainability. Towards this, FES follows a Socio-Ecological Approach to Livelihoods (SEAL) with its focus on natural resources based livelihoods. The approach places equal weightage on society, ecology and economy and helps in optimization of natural resources and governance leading to enhanced ecosystem resilience.

The socio-ecological approach takes into account the contributions of natural resource infrastructure, conservation of commons and collective action and provides monetary interpretation of the same. It argues that natural resource infrastructure and conservation results in lowering the expenditure on inputs for farming and other natural resource based production; and collective action reduces the transactions costs saving time and labour. With respect to direct interventions, the approach promotes improved practices for farm based production systems, thereby improving production and productivity to enhance incomes. Moreover, incomes from biomass collections from common ecosystems adds to this income. Central to the approach are the social institutions which act as the pillars of support for collective action in protection of natural resources for economic and ecological well-being of the communities.

B. Project Interventions

Using this approach, the project aims to increase their household income of over 60,000 households by at least 50 percent over baseline over a period of four years. The project spans across 2 districts of Karnataka (Kolar and Chikballapur) and 5 districts of Rajasthan (Pratapgarh, Udaipur, Bhilwara, Pali and Chitturgarh) covering 1200 habitations. The areas identified for the project are rainfed regions with a fragile ecology marked by declining ground water table, degradation of common land due to uncontrolled grazing and poor farming practices, makes the population vulnerable to environmental risks given their high dependence on natural resources. Given their high ecological and economic vulnerability to climate shocks, these areas have been selected for the project intervention.

The project is thematically implemented at the habitation level, starting with formation and strengthening of village level institutions, preparation of village development plans, and development of livelihood plans for the households based on the availability of natural resources. Development of common land and water bodies, promotion of better farming practices, diversification of income through non-farm livelihood options, convergence with social security schemes, leverage funds from public livelihood development programmes and schemes, build capacities of community resource persons (CRPs) and formation and strengthening of SHGs are some of the planned interventions under the project.

C. Objectives and Scope of the Assessment

The current assessment aims to examine the change in income of the beneficiaries who were covered during the first year of the program. By studying institutional capacities, assessing ground level changes in economic situation of the communities and examining the change in natural resource base, the assessment has documented challenges, best practices and learnings from the interventions to suggest actions for way forward. An understanding of the institutional structures and the capacities built therein will also highlight the scope of sustainability of the outcomes beyond the project period.

It must be noted that the assessment is a process and outcome assessment which will examine the progress of the project in light of the objectives and assess the role of the project in increasing household income, strengthening local institutions and improving natural resource management. The assessment does not aim to attribute development outcomes in the project areas to this project. Thus, the quantitative exercise within the assessment will only establish mid-term values of indicators that are comparable to the baseline indicators to view contribution of the project in the changes over the project period.

D. Approach and Methodology

The conceptual framework to examine the processes and outcomes of the project is aligned with the socio-ecological approach to livelihoods, as adopted by the project. The three critical components addressed by the interventions in the program are- a) natural resource management, b) livelihoods enhancement and c) participatory governance. The assessment will be guided by a learning approach that will illustrate a sequence of cause-and-effect relationships analysing the entire process and the outcomes and communicate the path to the desired result.

The assessment has deployed a pre-post, cross-section design with a mixed method approach to measure the change in outcomes from baseline to mid-term period. The assessment team has undertaken a desk review of the project documents followed by primary data collection using quantitative interviews (structured) and qualitative interviews (Focus group discussions and key informant interviews).

One district in each of the states was selected for the assessment based on the maximum beneficiary coverage in the first year of project implementation. Thus, Chikballapur was selected in Karnataka and Bhilwara in Rajasthan. Within each district two blocks were selected at random. A total of 10 villages were selected in each district distributed equally between the two sleected blocks. A sample of 400 households was covered from these villages with equal weightage of the distribution of sample between the two states. In addition, 4 control villages were selected for data collection to compare the findings from the project areas.

E. Key Findings

The population in project areas are traditionally dependent upon agriculture and rearing livestock for their livelihood. Close to 85 percent of the population are small and marginal farmers and supplement their income with income from wage labour in the form of agricultural labour on other farms and casual unskilled labour in nearby mining and construction sites and distant towns. Less than 2 percent of the households reported to be engaged in non-farm business activities such as shops, small scale repairs, contracting and plumbing.

More than 90 percent households reported to be dependent on common land and forests for fuelwood and fodder. Availability of fodder and fuel wood greatly impact the women of the households as they take care of the livestock along with the household work. Availability of grazing pastures and common water sources such as cattle ponds, is essential for the women as it saves them from the drudgery of fetching fodder and water for the animals.

Fostering participatory governance of natural resources: Social outcomes

Central to the project interventions is building and strengthening local institutions as the centrality of sound institutions and good governance allows for an effective management of common pool resources and environmental services. Recognising the critical importance of people's participation for success of livelihood initiative centred on natural resource management, the project is directed towards facilitating equity and inclusion in its processes.

Village Level Institutions: The Roots behind Collective Action

Towards this, the project has facilitated the formation of a Village Level Institution (VLI) in every village. By design, all the adult members of the village are a member of the VLI and are eligible to participate in its meetings and decision making process. The VLIs have an executive committee of 11 members which include at least one member from each of the communities in the village and a minimum of three women from the village. These members are elected through a democratic process/selected by consensus in the village meeting, providing equal opportunity to the village members to elect a person from their community.

The VLIs provide a platform to the village to prioritise needs, analyse potential pathways and arrive at feasible solutions through participatory discussions on common issues that include conservation of natural resources, recharge of ground water levels and improved access to social security schemes. By creation of perspective plans, the VLIs specify the various development activities to be undertaken in the village with respect to conservation of commons and construction of natural infrastructure. These perspective plans, which include the livelihood plans and required MGNREGA support in detail, are then shared with the Gram Panchayats for their approval, thus enabling leverage of public funds for creation of common goods. Through development of by-laws for protection of common lands, the VLIs have helped in restoration of their grazing lands and water bodies, through collective action. As per the monitoring reports shared by FES, close to 4341 acres of common land has been treated using the MGNREGA funds as against the target of 3300 acres. By leveraging the scheme, 162 water harvesting structures (village tanks, farm ponds, cattle ponds and anicuts) have been constructed or renovated until the end of 2016. Further, the VLIs also support the SHGs by providing them with a seed fund for undertaking livelihood activities.

By focusing on common needs and goals of the village which centre around management of natural resources such as forests, grazing lands and water bodies and increasing access to social security schemes, the VLIs minimise the risk of elite capture and ensure equity in participation.

The data from the mid-term assessment suggests a high participation in the VLI meetings indicating its perceived importance by the villagers. Over 85 percent of the households reported to participate in the VLI meetings. Women's participation in the VLIs is essential as women are significantly dependent on common resources for fuelwood, fodder, timber, forage, food, drinking water for animals and other household requirements. Hence, their voice is necessary to inform decisions that will eventually affect them. Many VLIs support women to be nominated as MGNREGA mates to help their social and economic status. However, more action is required by the VLIs to understand the role that women can play in strengthening the processes and outcomes of the perspective plans. This provides the project with an opportunity to build a gendered approach in its trainings to sensitise the members of the key roles of women in such institutions.

Community Resource Persons: Change Agents for Development

The project has facilitated the development of a cadre of Community Resource Persons (CRPs) by building local capacities to develop and manage local resources on a sustainable basis and improve service delivery. These CRPs are capacitated with the skills needed to connect village institutions or Panchayats to development opportunities and improve local governance, especially that of natural resources. The CRPs play a pivotal role in supporting the VLIs in gaining skills and knowledge to fill the information gaps at village habitation level, mobilising local communities for collective action and enabling improved leverage and implementation of government schemes.

With inherent values of 'volunteerism' and 'social good', the CRPs act as a central point of communication with the VLIs, the SHGs and the individual households. They are trusted resource persons who are improving the knowledge of farmers regarding best practices related to agriculture, supporting village institutions in taking informed decisions regarding commons and engaging with gram panchayat and government officials for better service delivery. They support the SHGs by building their capacities to manage the group savings and engage in economic activities. Further, they provide assistance to the individual households in accessing social security schemes and bringing their issues to the VLI platform. In turn, the CRPs have gained the trust and respect of the communities who look up to them for solving their problems.

Having undergone various trainings and capacity building programs under the project, the CRPs are well placed to undertake developmental work in the village given their heightened social and political awareness. The CRPs are now empowered to be absorbed into other government programmes with many having been empanelled with the MGNREGA programme as barefoot technicians. However, the role of a CRP is very demanding and requires immense dedication, time and efforts on the part of these change agents. Thus, support in the form of village level resource persons is required to improve the efficacy and efficiency of the CRP's work.

Self Help Groups: Fostering Women's Participation

The project has created pathways to reach the households by supporting the formation and strengthening of SHGs which is an instrumental step in social and economic empowerment of women and their households. The SHGs have been established with an emphasis on developing access to micro credit and promoting micro enterprises. Under the project, the SHGs are seen as a unit under the VLIs wherein the business plans for the SHGs are approved by the VLIs based on their ecological sustainability, within the existing natural resources.

As per the monitoring data furnished by the implementing partner, until 2016, 808 SHGs have been formed as against the target of over 1300 SHGs. While in Rajasthan new SHGs are being created under the project, in Karnataka the project is working with already established SHGs (formed by other NGOs or under other government programmes) to avoid any duplication.

Formation of SHGs in Rajasthan remains a challenge due to poor experience of the community with SHGs in the past, particularly in the form of defaulting on loans.

The SHGs practice internal loaning at an interest of one or two percent per month for various consumption purposes to cover educational and health expenses, buy inputs such as seeds for agriculture, and sometimes, repayment of debts. With support from ABF, the VLIs provide the SHGs with a revolving fund in the form of a loan at a mutually agreed interest rate, to initiate any livelihood activities. Within the SHGs the women from the poorest of households are identified first for assistance and are provided with the seed money to buy small ruminants of an improved breed. Once the loan is paid back by the members, other members are identified based on their needs to receive loan for similar income generating activities. The SHG members reported that by virtue of their savings, and support from the group, they are now able to take care of certain household needs which earlier was not possible. Moreover, the loans from SHGs saves them from the clutches of the money lenders and their high interest rates.

Over time SHGs have carved their own space and have helped women develop their self-esteem. Participation in decision making for planning and monitoring of work sin common areas, sensitisation on use of toilets, and identification of households for support from social security schemes are some of the activities being led by SHGs in their villages. Since most of the SHGs are at a nascent stage of development, very few of them have started a business for income generation. However, the forum has helped the women in voicing their concerns and also increased their negotiating powers at home due to economic empowerment.

Thus, the project, through its process of bringing actors together to participate in the decision making process, has built social capital that expands the scope of sustainability of the project beyond securing livelihoods alone. By mobilising a large cadre of CRPs, creating a space for participation of community members from all castes, and ensuring women's engagement in the process, the project has thus built upon the strengths of the community to enhance this capital.

Conserving natural resources for improved ecology: Ecological outcomes

Collective action routed through the VLIs has led to increased availability of biomass[1], improved soil moisture regimes and increase in ground water table in the project areas. However, in Karnataka, the effects of the drought over the last two years are quite stark with very low ground water levels exacerbated by extensive use of underground aquifers over the last two decades in these areas.

Qualitative findings from the assessment indicate the increase in availability of fodder and fuel wood from the common areas, attributed by the community to the efforts towards protection of common lands. This increase in biomass has led to decrease in costs for purchase of fodder for livestock. In addition, women are now able to collect fodder as per their needs from one pasture with increased availability. This reduces their transaction costs with respect to time and effort. The reduced drudgery helps them in allocating their time for rest or other forms of paid labour.

The increase in availability of fodder and fuel wood as reported by the communities, is supported by evidence from the biomass assessment undertaken by FES. The assessment reveals significant increase in biomass in the last one year in project areas as compared to control areas.

[1] Biomass in the current context refers to the total amount of plant mass which includes food, timber, and fodder and feed for livestock.

Through water harvesting measures, the soil moisture regime of the areas has improved along with the ground water levels (in Rajasthan). This has helped farmers in increasing their production and productivity and reduce input costs on irrigation. Thus, with improved eco-system services the project has contributed in increasing the resilience of the population in managing stress periods such as droughts.

SECURING LIVELIHOODS THROUGH IMPROVED ECO-SYSTEM: ECONOMIC OUTCOMES

With enhanced ecosystem services and the effectiveness of direct interventions such as training of farmers on improved agricultural practices, leverage of MGNREGA to improve water harvesting capacities and building access to social security schemes, the project interventions have contributed towards securing the livelihoods of the target population, especially the small and marginal farmers.

Improvements in ecosystem services such as availability of ground and surface water, better soil-moisture regimes and enhanced availability of bio-mass (fodder and fuelwood) has led to reduction in input costs for the farmers and transaction costs for women. The direct interventions have led to an increase in net income of the sample households across the two states indicated by a shift in the proportion of households into higher income ranges.

Moreover, mean income of households from sources including MGNREGA, livestock and agricultural wage labour has also increased from the baseline. The cost of cultivation per acre was significantly lower in project areas as compared to control areas. This highlights the efforts of the intervention in increasing the knowledge of the farmers regarding better agricultural practices that reduce the input costs. Adoption of improved breeds of cattle and small ruminants, use of enhanced fodder seeds and increased knowledge of vaccination of the animals has led to an increase in mean income from livestock as compared to the baseline. With support from the project, the wages received under MGNREGA has shown improvement, even though a lot remains to be addressed under the scheme.

F. Conclusion and the Way Forward

The project has established its relevance in promoting a socio-ecological approach to livelihoods in light of the socio-economic and ecological context of the project areas. The interventions demonstrate their significance in securing livelihoods that are dependent on natural resources through ecological restoration of commons, augmentation of water resources and building resilience of farming systems through creation of natural infrastructure.

With focus on building social institutions and conservation of common property resources, the interventions have been effective in reducing input costs for the population, augmenting their savings. Further, with direct interventions, the project has enhanced the capacity of the farmers in increasing yields and productivity; supported individual households in accessing funds through SHGs for diversification of livelihoods; and built linkages for accessing social security schemes. With collective efforts, the evidence reveals an increase in overall income of the sample households along with an increase in the mean income of the households. This increase is also equitable in nature with small holders also witnessing an increase in mean income from wage labour, livestock and cultivation. Thus, the project through ecological and social measures is contributing towards securing the livelihoods of the project households.

The sustainability of a project is indicated by the acceptance of the interventions or measures by the communities and integration of activities into existing institutional framework. The project has leveraged on collective action in the implementation of the activities where the social

institutions have led the pathway to change. Revival of practices such as creation of by-laws and adoption of processes such as development of perspective plans by the VLIs are key measures of sustainability of the project. Moreover, more than 80 percent participation from the village in the VLI meetings, indicates its importance in the eyes of the community. With further strengthening of the VLIs and SHGs, the project will ensure continued collective efforts from the institutions towards implementation of the by-laws and safeguarding their natural resources that impact their livelihoods.

The assessment has highlighted several learnings that emerge from the challenges faced by the project during implementation. These learnings will help improve the current processes within the project and assist in design of similar investments in the future. Some of the key learning include:

Need for improved synergies between VLI and *Gram Panchayat* to overcome the structural issues in implementation of MGNREGA: Delay in creation of shelf of works, issues with monitoring of the type of work created under the schemes and delay in payments are critical challenges that discourage households from working under the scheme. Hence, this scenario provides an opportunity for the project to strengthen the VLIs with a focus on creating collective pressure on the gram panchayats to sanction the work on time along with timely payment for the works and be held accountable for any implementation errors. Moreover, the Gram Panchayats need strong push from the VLIs towards resolving pending cases of dispute on common area boundaries between villages, or regulations on sharing of common resources, in time.

Ensuring women's active participation in decision making for enhanced role of women in village development: More focus need to be laid on the sensitisation of the VLIs in encouraging women to voice their concerns in the forum, weigh in their opinions in the decisions taken and support them in undertaking livelihood activities through the SHGs. Promotion of women for the position of MGNREGA mates by the VLIs is a welcome move by the VLIs towards increasing the social and economic autonomy of women.

SHG federations for realising economies of scale: Given that most SHGs are at a nascent stage of development, federations or clusters of SHG seem to be too early a measure to be implemented. However, keeping in mind the next stage of SHGs in undertaking income generation activities, it would be advisable to consider strategies of forming their clusters to reach economies of scale through product aggregation, access larger markets, and increase their negotiating power with dealers and buyers of SHG produce.

Adequate support to the CRPs through re-distribution of responsibilities: Additional support to the CRPs in the form of village animators or resource persons will help reduce the concentration of work load on this cadre which will help strengthen the service delivery. The wide array of activities undertaken by the CRPs are supported by an honorarium of Rs. 4000 to 5000 per month based on their performance. The remuneration in light of their extensive work responsibilities and personal commitments towards their own households, creates discontent among the CRPs, as pointed out during field based discussion. This scenario thus, provides an opportunity for the project to engage local women animators in every village to support the CRPs in their work. This would reap a two pronged benefit of delegating village level work to the animators, reducing the workload of the CRPs and creating opportunities for women to work in village development that would inherently promote well-being of women and children.

Agricultural support activities to enhance backward and forward linkages for the farmers: The small and marginal farmers reported to be largely dependent on non-institutional credit for loan purposes due to inadequate financial infrastructure, extensive documentation processes and lack

of information. Further, limited access to the markets due to small scale produce and poor infrastructure with respect to transport and storage facilities, increases the dependence of farmers on the middlemen for sale of their produce. This leads to reduction in their benefits from the produce. Thus, further steps for the project include examining possibilities of building farmer producer groups to increase the negotiating powers of the farmers as a collective. Smallholder farmers who struggle to attain the minimum saleable lots accepted in most markets or whose volumes of production cannot justify the costs of investing in capital assets can derive the greatest benefits from joining a producer company. While linkage with the Agricultural Produce Market Committee (APMC) will support the farmers in receiving fair prices, exploring and advocating for models such as *'farmer-to-consumer markets'* under the Maharashtra State Agriculture Marketing Board (MSAMB)[2] are opportunities for the project to engage with. Moreover, development of community grain banks and seed banks will further enhance the resilience of the village economy.

The process assessment also highlights the need of the project with respect to streamlining of data sources, inter-linking of data bases of the project outputs and systematic consolidation of the project outcomes. Such a consolidation will enable a consolidated analysis of the impact of the investments made under the project; identify areas of concern that require attention; understand specific training needs for addressing the same; and, facilitate continued learning of the project staff for informed decision making.

[2] https://www.msamb.com/

STRUCTURE OF THE REPORT

The mid-term assessment report is divided into ten sections each of which has relevant sub-sections. Section 1, briefly introduces the program and the need for undertaking this assessment. Section 2 sets the context of the project highlighting the impact of the ecological degradation on rural economy. It builds the case for a socio-ecological approach to improve and secure livelihoods and presents the major characteristics of such an approach. It further describes the implementation of this approach in light of the socio-ecological and economic context of the project areas listing the interventions undertaken to achieve the objectives and outcomes of the project.

Section 3 presents the purpose, objectives and the scope of the assessment. Section 4 explains the approach and methodology adopted to arrive at the findings of the assessment. The assessment design includes the conceptual framework, the key areas of enquiry, the methodology adopted for data collection, the tools for data collection, the sample size and sampling methodology for the primary survey and a summary of the design of the assessment. It also highlights the limitations of the assessment and the methods used to mitigate the challenges posed by the limitations.

Section 5 presents the demographic, social, ecological and economic profile of the sampled households to enable better assessment of the findings in light of these profiles.

Section 6, 7, and 8 delve into the findings of the assessment describing the processes and outcomes of the interventions under the social, ecological and economic interventions. It assesses the contribution of the project in creating an enabling environment for fostering participatory governance through the community based institutions; improving service delivery through building capacities of local resource persons; enhancing the natural capital of the project areas through facilitating construction of natural infrastructure and enabling protection of common land; augmenting the household income through direct interventions and building ecosystem services for the community.

Section 9 provides a summary of the key findings of the report.

Section 10 presents the conclusions of the assessment systematically assessing the relevance, effectiveness, efficiency and sustainability of the project interventions. It further provides the recommendations based on the learnings from the project implementation.

INTRODUCTION

1. INTRODUCTION

Axis Bank Foundation (ABF) has supported Foundation for Ecological Security (FES) for the project '***Restoration of ecological security as a means of improving and securing livelihoods of the rural poor'*** through various farm and non-farm interventions for 60,000 households in 12 blocks in two districts of Karnataka and five districts of Rajasthan. The project was initiated in January 2015 with the aim of increasing the household income of the target households by at least 50 percent over baseline over a period of four years.

FES works with communities in rural areas of India on the principles of conservation of natural resources through building institutional capacities at the local level. Their approach of focussing on socio-ecological systems that underpin rural production systems, allows for securing natural resource based livelihood options, improving farming systems for better crop productivity and enhanced food security of the poor households, enabling diversification of livelihoods and promoting technology for enhanced soil and water conservation practices.

Under this project, FES has thematically implemented at the landscape level, starting with formation of village level institutions (VLI), supporting preparation of village development plans, basis availability of and access to resources by the village communities. Further, through targeted interventions of building capacities of VLIs and local resource persons, watershed management and promoting improved agronomical practices, the project has focused on better management of natural resources including soil, water, bio-mass and bio-diversity. Moreover, the project has engaged in formation and strengthening of women Self-Help Groups (SHGs) to foster economic empowerment of women, improve collective action and enhance women's participation in governance of natural resources. Furthermore, the project has leveraged upon different government programs including Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and National Rural Livelihood Mission (NRLM) to create productive assets towards ecological conservation. At the household level, the project has worked upon improving access to various social security schemes to improve rural livelihoods.

As the program has now entered its third year of implementation, ABF is keen to undertake a mid-term evaluation to understand the effectiveness of the project interventions and the direction that it is taking in order to address any mid-course corrections. Towards this NR Management Consultants (NRMC) has undertaken a mid-term assessment of the stated project during August and September 2017 to document the processes adopted for the project implementation, examine the effectiveness of the interventions in meeting the program objectives and understand the requirements, if any, of a mid-course change in intervention strategy.

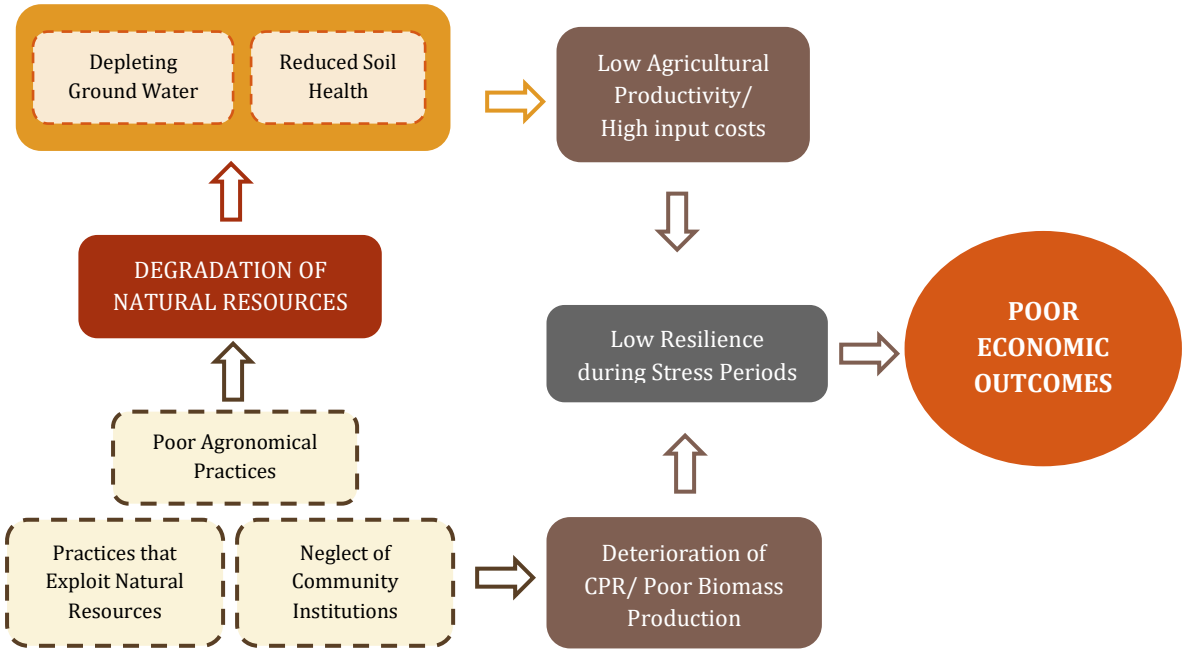
2. CONTEXT

In rural areas, livelihood and its growth is inextricably linked to the health and productivity of natural resources. Agriculture and other rural livelihood activities are in essence a series of complex interactions with the environment and are inherently natural resource dependent, shaping the rural economy[3]. Any change in these natural resources such as rivers, seas, forests, rangelands, cropping areas and grazing pastures, thus, has a significant impact on the economic conditions of the rural population. Recent discourse on environmental degradation highlights the disproportionate effect of climate change and related environmental risks on the rural poor, given their heavy dependence on natural capital. Findings from the Millennium Ecosystem Assessment[4] indicate that more than half of the key ecosystem services are used unsustainably, with the natural resources critical to agricultural production and livelihood security for the rural poor degrading rapidly.

2.1. The Impact of Ecology on the Economy of the Poor

Amidst the rising global concerns over effects of climate change on natural resources, the poor and vulnerable communities in rural India require critical attention. Degradation of natural resources, fragmentation of land holdings, poor access to information, credit and markets, inadequate attention to community based institutions, and improper use of common pool resources, exacerbate the issues surrounding the livelihoods of the rural poor. These challenges manifest themselves more in the case of rainfed areas which are ecologically fragile with poor rainfall, severe drought conditions and vast areas of degraded land unfit for cultivation. Apart from poor rainfall and poverty, rainfed regions in India also have immense population pressure leading to increased stress on natural resources and immense competition among the communities for water and land.

Figure 1: Adverse Effects of Ecological Degradation on Economy



[3] International Fund for Agricultural Development (IFAD) (2012). *Environment and Natural Resource Management: Resilient livelihoods through the sustainable use of natural assets.* IFAD, August 2012. Accessed from https://www.ifad.org/documents/10180/188d8ed7-5f6f-44fa-b49b-8c2a548f3f34 on 5 October, 2017.
[4] *ibid*

2.1.1. Adverse impacts of ecological degradation and neglect of social institutions

Climate change adds an additional layer of complexity to existing sustainable development and natural resource conservation challenges[5]. Climate variability is expected to adversely impact the water and soil conditions especially in arid and semi-arid areas of the country translating into reduced river runoff, decreased ground water availability and poor soil health. In India, where ground water is the major source of water for irrigation, degradation of water sources is expected to exacerbate already stressed ground water resources. Depleting ground water coupled with poor agronomical practices is likely to increase the input costs and result in decline of agricultural productivity leading to food and nutrition insecurity in the long run. For households dependent on only agriculture for their income, such a scenario reduces their capacity to cope with stress periods such as droughts.

Moreover, neglect of traditional knowledge and social systems of governance of natural resources in policies and programs, has led to growing pressure on the common property resources (CPR) such as forests and grazing land which hastens their degradation. Such issues affect the poor first, and influence their choice of crops, cropping patterns, and the livestock they breed and consequently their economic outcomes. Among the poor, women are comparatively worse off due to their high dependence on natural resources for fuelwood, fodder, timber, forage, food, medicines, drinking water for animals and other household requirements.

2.1.2. Need for a natural resource based approach towards livelihood promotion

In such a scenario, adaptation measures at the landscape level will need to be more responsive to the natural environment to make rural livelihoods more resilient. In drought-prone areas, farmers' capacities to capture the available supply of rainwater in the form of improved water harvesting structures for surface or underground water storage will need to be strengthened. Further, adoption of proven sustainable land management and crop management practices can help farmers in improving productivity and build resilience towards environmental shocks. Revival of traditional knowledge of communities, strengthening community based institutions for local governance of natural resources and increasing participation of women in such decision making bodies is likely to reduce degradation of common land, increase availability of and access to fuel and fodder for all communities and enhance preparedness for stress periods.

Towards this, a mainstream livelihood approach, with its focus on surplus generation and profit maximisation alone, discounts the role of ecology in securing livelihoods and that of social institutions in promoting equitable distribution of resources. Such interventions focus on individual benefit and not necessarily build the resilience of the poor households in the long term, who are highly vulnerable to natural shocks such as floods and droughts. Therefore, a more holistic approach towards promoting livelihoods is essential, one that takes into account the dependence of livelihoods on natural resources and focuses on ecological and social sustainability.

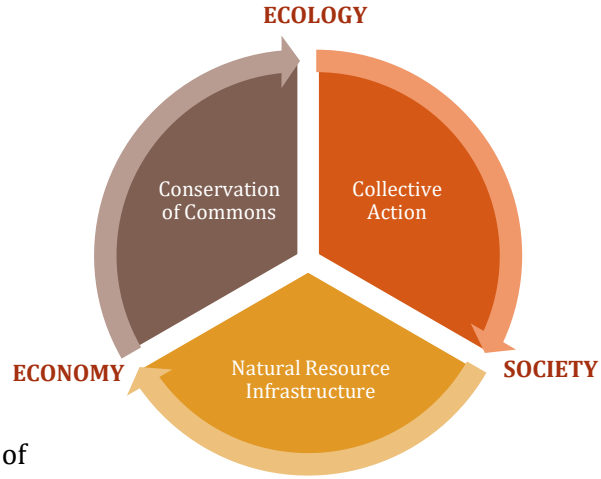
[5] Bourne A, Holness S, Holden P, Scorgie S, Donatti CI, Midgley G (2016) A Socio-Ecological Approach for Identifying and Contextualising Spatial Ecosystem-Based Adaptation Priorities at the Sub-National Level. PLoS ONE 11(5): e0155235. https://doi.org/10.1371/journal.pone.0155235

2.2. SEAL: Building Resilient Livelihoods through a Socio-Ecological Approach

In the above context to account for the interconnectedness of social and ecological systems in designing livelihood development pathways, FES follows a Socio-Ecological Approach to Livelihoods (SEAL)[6] with its focus on natural resources based livelihoods for ecological and social sustainability. The approach is rooted in the belief that there is a *'compelling need to make nature-oriented and primary sector-based livelihoods more remunerative (not monetize but provide a monetary interpretation or economic valuation) and rewarding (by unravelling natural opportunities and influencing market through green opportunities) for the communities who live by it and care and share it'*[7]. The approach thus, places equal weightage on society, ecology and economy and helps in optimization of natural resources and governance leading to enhanced ecosystem resilience.

Through this approach, FES with support from ABF seeks to secure livelihoods that are dependent on natural resources through ecological restoration of commons, augmentation of water resources and building resilience of farming systems through creation of natural infrastructure[8,9]. Central to the approach is *collective action* through revival and capacity building of community based institutions such as VLI for improved local governance of natural resources. The approach promotes assistance to communities to determine and adopt consumption levels that are within the ecological capacity of the area through facilitating collective action of local communities towards conservation of natural resources.

Figure 2: Pillars of Socio-Ecological Approach to Livelihoods



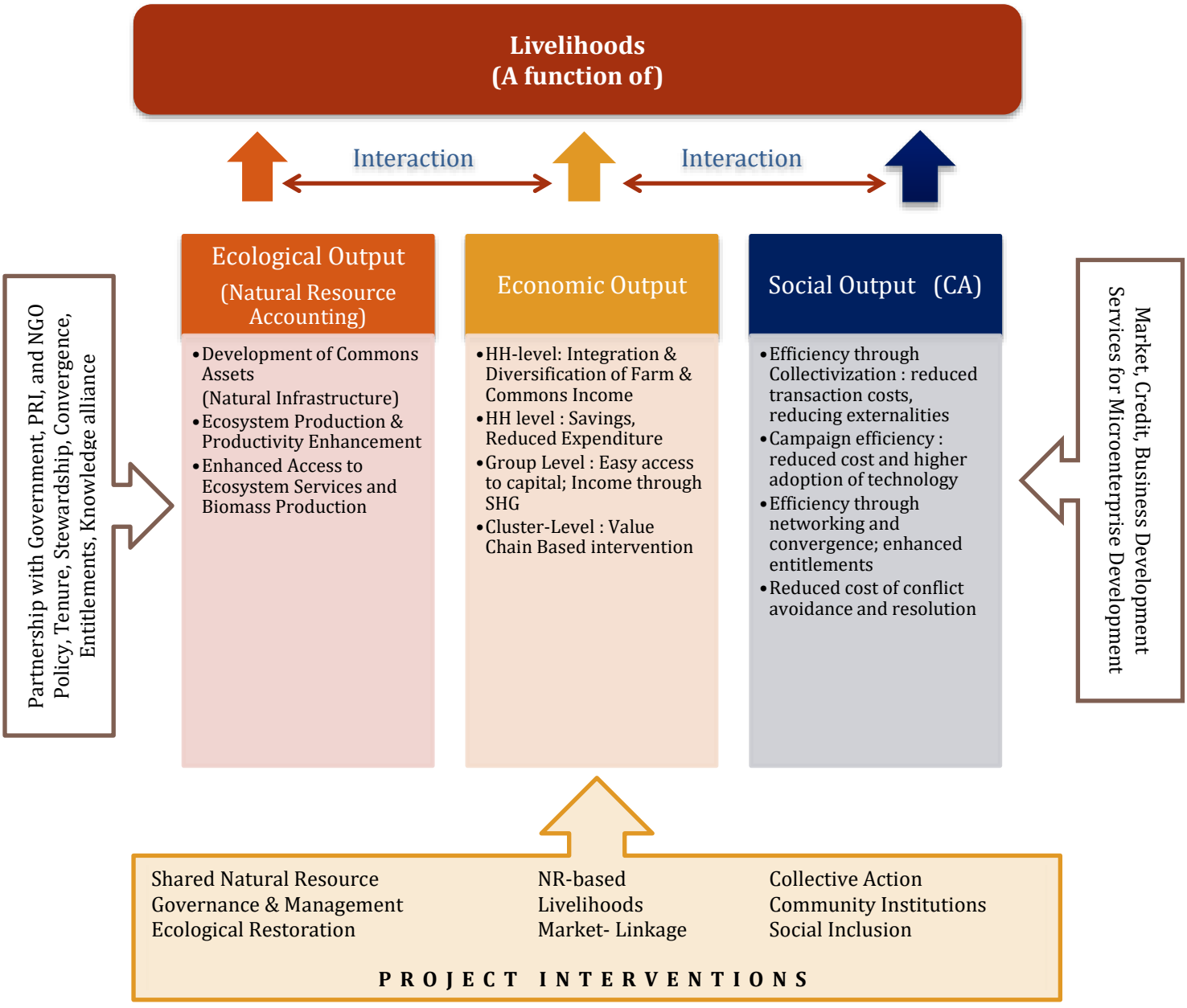
The socio-ecological approach takes into account the contributions of natural resource infrastructure, conservation of commons and collective action and provides monetary interpretation of the same. It argues that natural resource infrastructure and conservation results in lowering the expenditure on inputs for farming and other natural resource based production; and collective action, reduces transaction costs, *thereby adding them as savings to augment overall income*[10]. With respect to direct interventions, the approach promotes improved practices for farm based production systems, thereby improving production and productivity to enhance incomes. Moreover, incomes from biomass collections from common ecosystems adds to this income. It facilitates market engagement through convergence with social security schemes and interaction with different actors to ensure receipt of a fair price of the products. Further, the approach includes collectives vis-à-vis SHGs who engage in livelihood activities within the ambit of the natural resource base.

[6] While the larger SEAL framework is work in progress and yet to be operationalised, elements of the framework are a part of FES's approach.
[7] FES. *Socio-Ecological Approach to Livelihoods: An Approach Note.* Retrieved from secondary documents shared by FES.
[8] *ibid*
[9] This natural infrastructure includes water, soil, biomass and bio-diversity.
[10] FES. *Socio-Ecological Approach to Livelihoods: An Approach Note*.

In context of realisation of increased incomes, it is essential to address the concerns of inclusion and equity with respect to participation and receipt of benefits by the poor and vulnerable, especially women. Towards this, the approach lays emphasis on the centrality of the village institutions wherein all villagers are a member; the strengthening of SHGs to move beyond only micro-lending and create a space for women to participate in decision making processes and; ensuring the interests of the poor by *'putting the last first'.*

Thus, SEAL is a more holistic approach based on the premise that livelihood must be seen as a function of economic and financial return in consonance with ecological and social return in an overarching political and cultural environment where processes and returns are interconnected. As a result, the approach centres on the larger well-being of the poor with greater resilience to vulnerabilities in order to sustain their livelihood than just a linear increase in incomes. Figure 3 highlights the key aspects of the approach building upon the project interventions leading to intermediate and long-term outcomes.

Figure 3: Effects of Ecology on Economy (Source: FES)



2.3. Implementation of the Socio-Ecological Approach to Secure Livelihoods

The socio-ecological approach is guided by FES' experience of working with communities in different socio-economic and ecological regions. However, over the years interventions under the approach were directed towards conservation of natural resources at the village level and building institutional capacity for collective decision making on the compatibility of the land use and livelihood practices with the natural potential of the area. **With support from ABF, this approach has been scaled up to the household level with an aim to secure livelihoods of 60,000 households across 7 districts in the states of Rajasthan and Karnataka.** Under the current project, the implementation is also targeted towards assessment of realistic requirements at the household level and in devising equally rewarding livelihood alternatives. These are linked to the activities that improve farming practices for enhanced production and productivity while at the same time not undermining the natural base.

2.3.1. Project Objectives

Through its targeted interventions, the project expects that around 60,000 HH would be able to increase their household income by at least 50 percent over baseline over a period of four years. The key project objectives towards improving rural livelihoods through natural resource based interventions are:

a) Improve livelihoods of small, marginalised 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 NTFP) 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 MGNREGA, NRLM, RKVY and other social security schemes to create productive assets for improving rural livelihoods.

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

2.3.2. Project Coverage

The project is being implemented in two districts of Karnataka (Kolar and Chikballapur) and five districts Rajasthan (Pratapgarh, Udaipur, Bhilwara, Pali and Chitturgarh) covering over 1200 habitations. These districts were selected based on criteria including degradation of natural resources, high dependence of population on natural resources for livelihood, vulnerability of livelihoods to environmental risks, availability of common lands and support of the respective State Governments. A summary of the coverage of the program in the two states is presented below in Table 1.

Table 1: Summary of programme coverage

State	District	Blocks	Villages	Target households to be covered*
Karnataka	Kolar	Kolar & Srinivaspur	600	15,000
	Chikka ballapur	Bagepalli & Sidlagattha		15,000
Rajasthan	Pratapgarh	Begun, Gogunda, Kotri, Mandal, Mandalgarh, Peepaikhoont, Pratapgarh, & Sojat	600	10,000
	Udaipur			5,000
	Bhilwara			10,000
	Chittaurgarh			2,500
	Pali			2,500
Total			**1200**	**60,000**

Source: Terms of reference defined by ABF

* Target households to be covered under SHG, agriculture, and other livelihood interventions over 4 years

Table 2 presents some of the key demographic, social and ecological indicators for the project states. The data indicates the presence of a significant proportion of population of scheduled caste and scheduled tribe in the two states who are highly dependent on agriculture, livestock, forests and wage labour for livelihood.

Table 2: Demographic, social and ecological indicators of project states

Indicators	Karnataka	Rajasthan
Proportion of population living below poverty line[1]	20.91	14.71
Proportion of Schedule Caste population to total population[2]	16.2	17.2
Proportion of Schedule Tribe population to total population[3]	6.6	12.6
Proportion of common land other than forestlands[4]	30.3	52.2
Proportion of forest cover[5]	8.24	3.42
Total common land under protection (ha)[6]	22,589	38, 519
Principal crops grown[7]	Groundnut, Paddy, Chilly and Mango	Jowar, Groundnut and Wheat

Sources: 1- Government of India, Planning Commission, 2013, Press Notes on Poverty Estimates, 2011-12
2, 3- Census Data of India, 2011 || 4, 5, 6, 7- Secondary data from FES

In Rajasthan, Bhilwara is largely dominated by non-tribal population while Udaipur and Pratapgarh have a high concentration of tribals (90 percent) with Bhils and Garasiya as the dominant tribes in the former and, Meena tribe in the latter district. Livelihoods in these arid and semi-arid districts depend upon rain-fed agriculture and livestock. The households also depend upon wages from agriculture labour and migration to neighbouring towns is common to supplement income. Groundnut, maize and jowar are the main crops grown during the Kharif season while mustard and wheat are grown during the rabi season.

The districts of Kolar and Chikballapur, in Karnataka lie in the Deccan plateau region. In these arid districts close to one-third of the population is scheduled caste depending mainly on agriculture for livelihood. The area depends mostly on ground water through bore well irrigation due to absence of perennial rivers, canals, tanks and lack of the shallow groundwater aquifer. The intensity of cash crops like paddy, maize, 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[11].

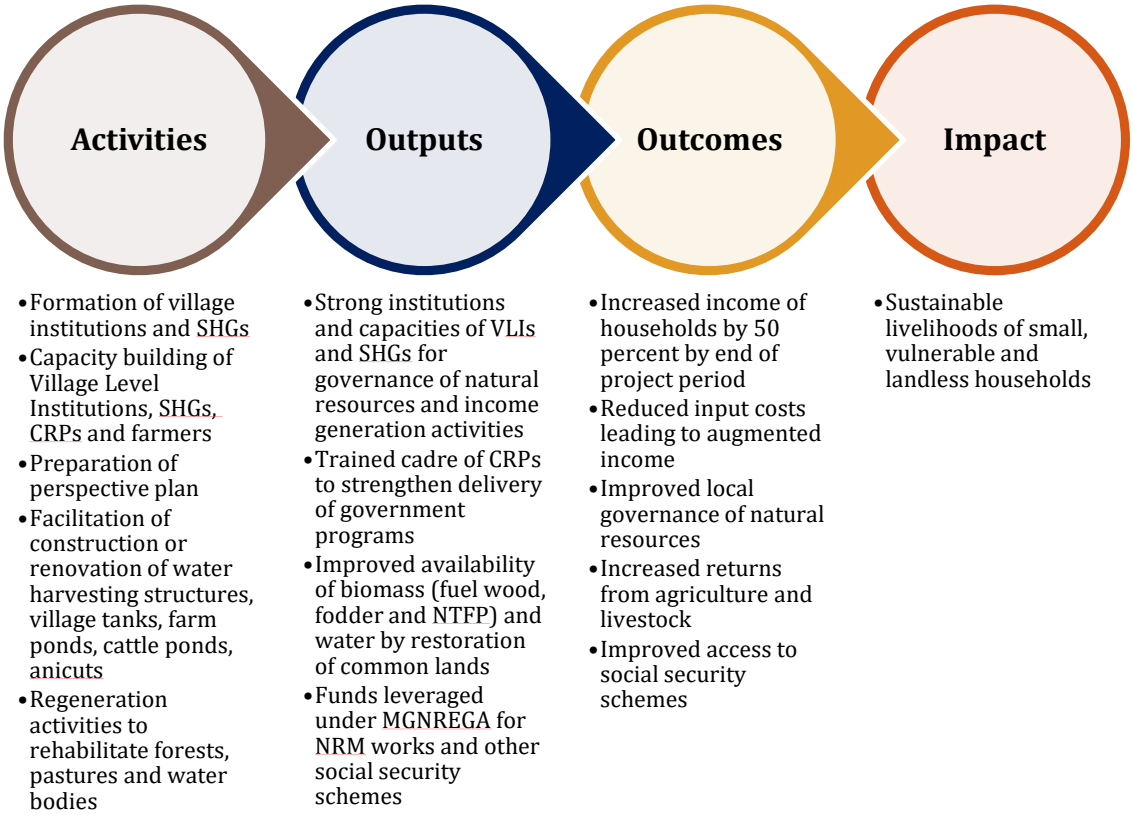
2.3.3. Project Model and Interventions

The fragile ecology of the districts, marked by declining ground water table, degradation of common land due to uncontrolled grazing and poor farming practices, makes the population vulnerable to environmental risks given their high dependence on natural resources. Women in these areas particular bear a higher burden of these risks as they are more dependent on natural resources for their daily household activities. With inadequate focus on local institutions, poor governance of common land in these areas has led to their degradation severely affecting the households with farming as their source of income. Thus, the communities required critical support in securing their livelihoods without further compromising on their natural resources.

The project's socio-ecological approach finds its relevance in such a context as it aims to address the interconnections between social-institutional-ecological-economic systems and promote a system perspective which pays emphasis on ecological priorities alongside social and economic agenda, checks reductionism and linear thinking and helps take a composite view of interactions between resource, people and governance systems[12].

In this light, figure 4 presents the theory of change of the program outlining the flow of the core activities, the intermediate outputs, the livelihood outcomes and the intended change at the end of the project period.

Figure 4: Theory of change of the project



[11] Retrieved from documents shared by FES on area profiles of project areas.
[12] Retrieved from secondary documents shared by FES on approach of the project.

2.3.4. Project Interventions

The project is thematically implemented at the habitation level, starting with formation and strengthening of village level institutions, preparation of village development plans, and development of livelihood plans for the households based on the availability of natural resources. Development of common land and water bodies, promotion of better farming practices, diversification of income through non-farm livelihood options, convergence with social security schemes, leverage funds from public livelihood development programmes and schemes, build capacities of community resource persons (CRPs) and formation and strengthening of SHGs are some of the planned interventions under the project. These interventions can be broadly categorised as follows:

Social: In order to improve and secure the livelihoods of the communities, the project first engaged with local communities to understand the social and ecological underpinnings of the local livelihoods and map the ways in which they can contribute to improve livelihoods. The VLIs are formed and strengthened as a first step to the process to develop rules and regulations for the communities to follow to improve management of natural resources. These institutions are guided on village level development process by preparing village level micro-plans for restoration of common lands and implementing various ecological and social interventions within the village landscape. Facilitation of convergence of these activities with various government schemes for holistic village level development, is undertaken.

Several households are brought under the purview of SHG for implementing livelihood activities. The VLIs are responsible for the scrutiny of any business plans developed by SHGs to take up micro-enterprise activities. Activities which are within the carrying capacity and do not adversely affect natural resources are permitted.

A cadre of community resource persons (CRPs) has been created to strengthen local stewardship, develop and manage local resources on a sustainable basis, interact with relevant stakeholders for improved delivery of government programs, enhance knowledge of farmers on better agriculture practices, and support SHGs in keeping records and making livelihood plans.

Ecological: The VLIs are supported under the project to undertake appropriate water conservation activities, and regeneration and conservation activities to rehabilitate forests, pastures and water bodies. Further, farmers are provided trainings on soil and moisture conservation, water harvesting techniques, cropping patters and crop water budgeting to improve the ground water level. Restoration efforts create enabling conditions towards enhancing economic opportunities via improved soil moisture regimes, provision of critical irrigation and allowing for double cropping.

Economic: The major livelihood interventions promoted under the project include restoration activities on common land and water bodies, creation of water harvesting and water retention structures that contribute to livelihood development. The project promotes better agronomical practices to the farmers which include land development, soil moisture conservation measures, mixed cropping, increasing crop diversity, and improved seeds. Under livestock management, creating better conditions through health camps and measures of safe upkeep for enhancement in productivity of the livestock. Facilitation of linkage of households to social security schemes such as MGNREGA, Old Age Pension Scheme and Widow Pension Scheme has been undertaken. Further, formation and strengthening of SHGs has been carried out to develop access to micro-credit, promote ecologically sustainable micro-enterprises and establish a forum for women to meet, interact and discuss common issues for collective action.

3. PURPOSE, OBJECTIVES AND SCOPE OF THE ASSESSMENT

As the project has now entered its third year of implementation, ABF is keen to undertake a mid-term assessment of the project to understand its current effectiveness in light of the project outcomes and the direction that it is taking in order to identify mid-course corrections, if any. The findings of this assessment can help inform the project about the role of community institutions in better addressing ecological concerns that directly or indirectly affect livelihoods. In context of income enhancement, this assessment will present evidence of any change in income of the target population through either reduction in input costs or increased production and productivity. Further through examination of the processes of the model, the assessment can highlight whether and how the project has ensured equity and inclusion in its process with respect to access to natural resources, participation in self-governance and economic opportunities. An understanding of the institutional structures and the capacities built therein will also highlight the scope of sustainability of the outcomes beyond the project period.

Thus, the key objectives of this assessment are:

a. Examine the change in income of the beneficiaries who were covered during the first year of the program.
b. Study institutional capacities, participation of community members and engagement of SHGs in improving livelihoods, natural resource base and governance processes.
c. Assess ground level changes and capture tangible milestones of the project interventions with respect to socio-economic situation of households (diversification of livelihood options, reduction in household expenditure on fuel and fodder, access to credit, markets, and social security schemes and cropping practices)
d. Document challenges, best practices and learnings and suggest actions for way forward

Based on the above objectives, the scope of the assessment is:

a. The assessment is a process and outcome assessment which will examine the progress of the project in light of the objectives and assess the role of the project in increasing household income, strengthening local institutions and improving natural resource management.
b. It aims to capture the process of institution building and examine how the institutions (VLIs, SHGs and the cadre of CRPs) interact with each other to improve governance of natural resources. Further, it will highlight the role of the project in creation of social capital.
c. The assessment provides perspective on the utilisation/leveraging of government schemes to create productive assets for improving rural livelihoods.
d. The assessment will capture the effectiveness of the direct interventions with farmers such improved agricultural practices to measure the change in input costs of farming.
e. It will highlight how the model has enabled women's participation and strengthened women's position in decision making.
f. The assessment does not aim to attribute development outcomes in the project areas to this project. Thus, the quantitative exercise within the assessment will only establish mid-term values of indicators that are comparable to the baseline indicators to view contribution of the project in the changes over the project period.
g. Results of the assessment (undertaken in August-September 2017) cover the households brought under intervention in the first year of the project implementation (2015).

It is foreseen that the results of the assessment will enable ABF and FES to objectively assess the merits of the approach and the implementation model. The learnings will not only help improve outcomes of this project but also help in better design and implementation of future projects.

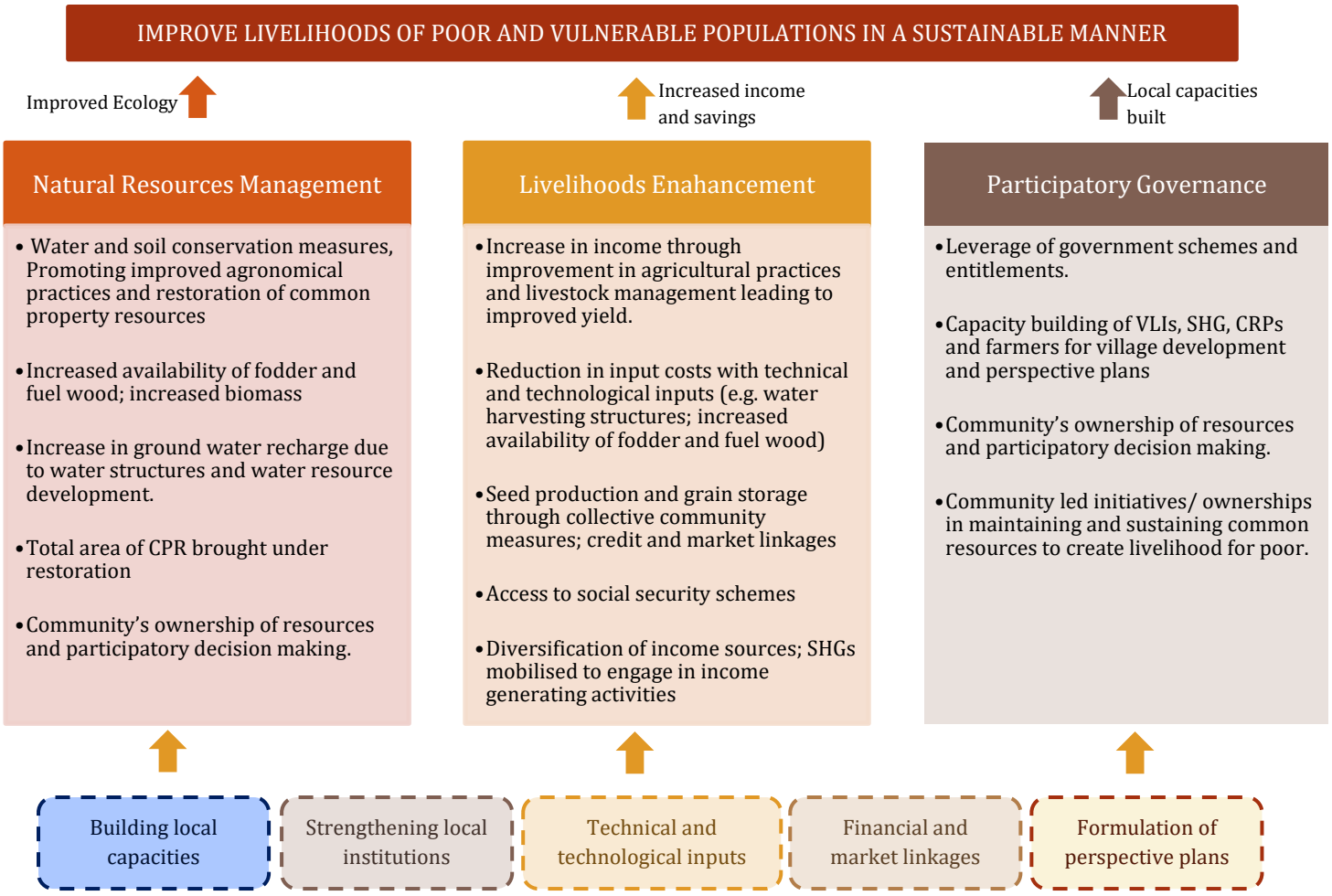
APPROACH AND METHODOLOGY

4. CONCEPTUAL FRAMEWORK AND ASSESSMENT DESIGN

As indicated in the program objectives, sustainable livelihoods for the poor is the key impact that the project is envisaging, as a result of different interventions. Land and soil conservation measures and restoration of common land are likely to improve crop yields, availability of ground and surface water, availability of biomass and livestock productivity. This will contribute to increase in income of households which is likely to result in food and nutritional security. Moreover, improved methods of cultivation, better livestock breeds, and restored grazing pastures and common water bodies will bring down the input costs for farmers and reduce transactional costs augmenting the household income. At the same time, availability of livelihood options throughout the year through diversified income sources will reduce distress migration from rural areas. Further, strengthening institutional capacities will result in improved local self-governance and increased access to social security schemes and natural resources for the poor and vulnerable communities.

With this context, the conceptual framework to examine the processes and outcomes of the project is aligned with the socio-ecological approach to livelihoods, as adopted by the project. The three critical components addressed by the interventions in the program are- a) natural resource management, b) livelihoods enhancement and c) participatory governance. The analytical framework, addresses specific sub-elements under each component, as shown in figure 5.

Figure 5: Conceptual Framework of the Assessment



The assessment will be guided by a learning approach that will illustrate a sequence of cause-and-effect relationships analysing the entire process and the outcomes and communicate the path to the desired result. This learning approach will help answer three critical questions using the conceptual framework:

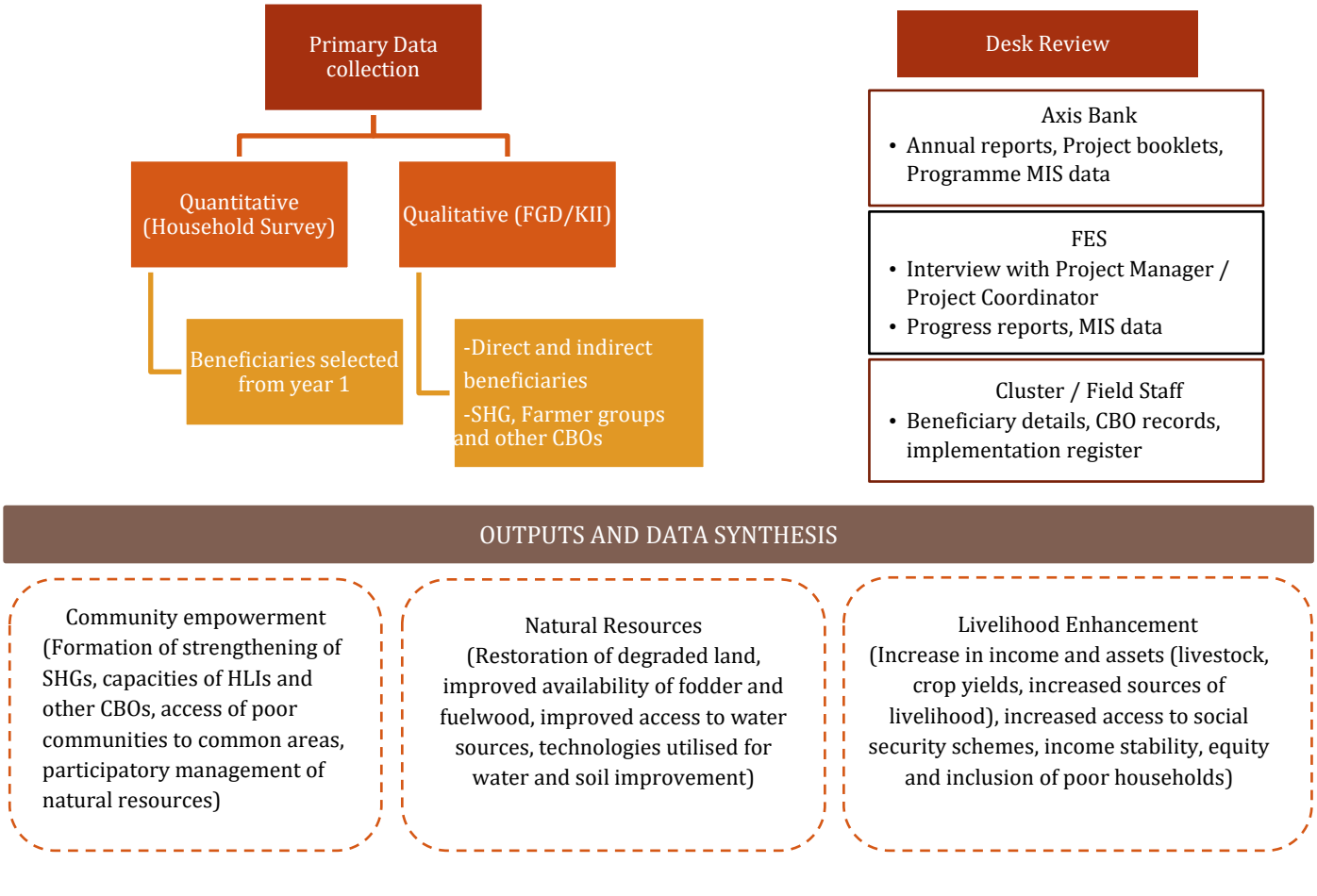
Figure 6: Process of reaching the assessment objectives

Our evaluation approach will focuses on examining the direct and indirect outcomes and their underlying reasons and hindrances, providing a measurable response to what has worked and what has not through the assessment of the outcome indicators.

4.1. Design and Methodology

The assessment has deployed a **pre-post, cross-section design** with a **mixed method approach** to measure the change in outcomes from baseline to mid-term period. The assessment team has undertaken a **desk review** of the project documents followed by **primary data collection** using quantitative interviews (structured) and qualitative interviews (Focus group discussions and key informant interviews). Below is an illustration of the methodology for the assessment which was finalised in consultation with ABF.

Figure 7: Methodology for Evaluation



Some of the key considerations in finalising the design of the assessment are as follows:

a. The mid-term assessment **does not aim to attribute the changes** brought about in the target population to the project alone. It will however, **highlight the contribution** of the project in bringing about the change.
b. For the quantitative surveys, the universe of households were those enrolled under ABF's program prior to December-2015 which was 8400 households.
c. A sample of counterfactuals (households which were not a part of the intervention) was covered from villages where the intervention did not take place. The data from the interviews with these participants has been used to enrich the findings.

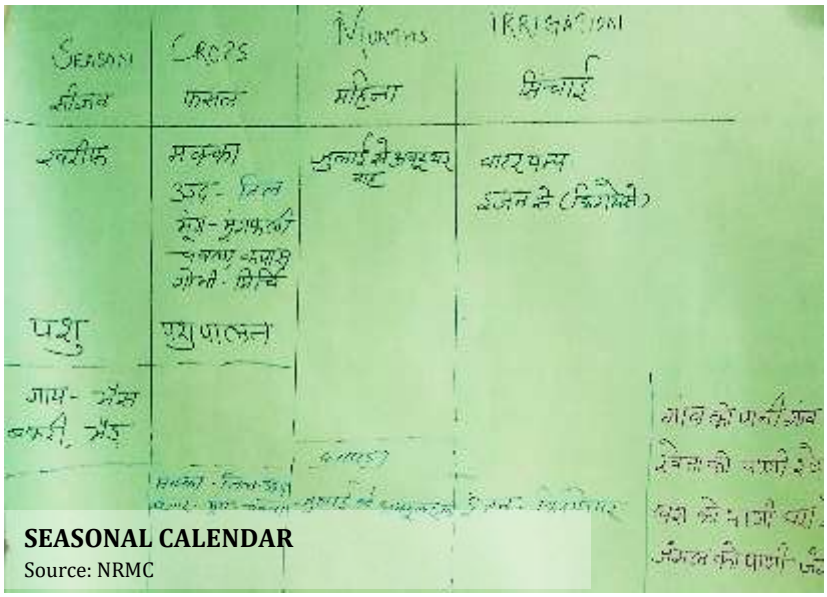
4.1.1. Key Information Areas

The key information areas for the study include change in income of households from baseline; capacity building and strengthening of community based institutions; improvement in access to water for irrigation; diversification of agriculture and enhance agriculture productivity through knowledge management; restoration of common property resources; make small and marginal farming activities viable; diversification of livelihood options; and, development of short and long term strategies for market linkages. A list of the data points used for each of the key information areas used for data collection have been presented in Annexure I.

4.1.2. Tools for data collection

The mid-term assessment used a mix of secondary review and primary data collection methods. A list of the secondary documents reviewed has been added in Annexure II. For primary data collection, four tools were used:

a. Structured Household Interview Schedules to capture demographic information, income sources, income details from various sources, dependence on common property resources and participation in community institutions.
b. Discussion guides for focus group discussions with VLIs, CRPs, SHGs, farmer groups and the community.
c. H-Form tool to record the views and ideas of the institutions (including CRPs) in a more effective manner.
d. Seasonal calendar to capture the inputs of farmers on changes in cropping patterns and assess their vulnerable periods.



SEASONAL CALENDAR
Source: NRMC

4.1.3. Sample size and sampling distribution

The sample size estimated for the study was 400 households from the project area. A sample of 60 control households was also covered in the assessment. The details of the calculation of sample size are provided in Annexure III.

Selection of District: The sample was equally distributed across the two project states as the population covered under the project is the same in the two states. Within each state one district was selected for the assessment based on the maximum beneficiary coverage in the first year of project implementation. Thus, Chikballapur was selected in Karnataka and Bhilwara in Rajasthan.

Selection of Blocks: In each district two blocks were selected. In Chikaballapur, only two blocks (Bagepalli and Sidlaghatta) were under the project intervention and were thus, automatically selected. In Rajasthan, Mandal and Mandalgarh were selected through random sampling.

Selection of Villages: Within each district, ten villages were selected through stratified systematic random sampling from the universe of villages where project has been implemented. The process is as follows:

- The universe of villages was divided into two strata, low and high, by population.
- In each strata, ten villages were chosen using systematic random sampling. This method ensures that villages with low population are also covered.
- In addition 2 control villages in each district were selected for the interviews as well.
- The list of villages covered has been provided in Annexure IV.

Selection of Households: In each village, 20 households were covered in both Rajasthan and Karnataka. The process of selection of households was as follows:

- Within each selected village, the list of beneficiary households with the household income at baseline was made available by FES. This income-wise household listing allowed for stratification of households by income, thus, allowing for selecting a sample for measuring the changes in income over time.
- Stratification of these households was done basis the six income categories provided in the ToR (and as required for the analysis).
- Within each strata, sample households were selected in the same proportion as that of the strata, using probability proportionate to size (PPS) sampling.

The sample size covered during the field is as follows:

Table 3: Sample size covered during the field

States	Districts	Blocks	No. of villages selected		Number of households interviewed
			Project	Control	
Karnataka	Chikkaballapur	Bagepalli	5		100
		Sidlaghatta	5	2	130
Rajasthan	Bhilwara	Mandal	5		100
		Mandalgarh	5	2	130
Total			**20**	**4**	**460**

For the qualitative study, 20 interviews (Focus group discussions and key informant interviews) with SHGs, VLIs, CRPs and farmer groups were conducted across the four districts. Four FGDs were conducted in control villages. The list of villages covered has been provided in Annexure V.

4.2. Methods of Data Analysis

Both quantitative and qualitative data was analysed and triangulated to arrive at the findings. A tabulation plan for the analysis was shared with ABF for their review of the indicators. Based on the availability of baseline data, comparison between baseline and mid-term has been drawn to highlight the change in intermediate and immediate outcomes that has happened over time. Wherever relevant, a comparison of control and project data has been undertaken to highlight the outcomes in absence of the project. The qualitative data from the participatory discussions was documented by the researchers and then **analysed through content analysis using the themes mentioned in the research approach.**

It must be noted that during data analysis, four households from the project villages were removed from the data set due to inconsistencies in the household data on several data points. However, considering that the total sample size included buffer households, such omission does not affect the findings.

The terms of reference require tabulation of data for change in average annual income by income categories between baseline and mid-term. While *data for average annual income has been provided for each income category in both baseline and mid-term,* the change in annual income by income categories has not been calculated as it requires actual number of households for calculation. *Given that the baseline and mid-term sample numbers differ widely, a comparison of the mean incomes will not present an accurate picture of the change in incomes*. However, *change in proportion of households in the income categories, has been presented* in table 11 to indicate the change in income levels by different categories.

A mid-term assessment has also been conducted by FES, the findings of which have been highlighted in the tables in the annexures. While the findings of the present assessment align with those in the assessment conducted by FES, the methodologies adopted in both the assessments are different. Hence, a comparison of the two assessments is not suitable at this stage.

Based on the success stories, the learnings during the implementation period and the available beneficiary data, the strengths, weaknesses, opportunities and threats (SWOT) for the program interventions has been examined. This analysis of the program interventions has considered economic changes, sustainable utilization of resources, and improvement in collective action for management of natural resources. Three case studies highlighting the role of the project in creating a social capital are a part of the report.

4.3. Limitations of the Methodology

Limitations of the methodology faced during the assessment, along with the mitigation measures adopted for each are as follows:

Limitation: Baseline data is not present for all the indicators across the states.

Mitigation Measure: Since the current evaluation is a process and outcome evaluation, available quantitative indicators were used to support qualitative findings. Comparisons have been drawn between baseline and mid-term data at project level to examine changes across select indicators.

Limitation: The input costs of cultivation and livestock are not disaggregated by different inputs but taken as a whole. The mid-term data has been collected for different inputs for each source of income. Thus, the methods may lead to the data not be comparable to each other.

Mitigation Measure: Discussions were held with the implementation partner to identify the components of the input costs (for cultivation and livestock) based on which the baseline data was collected. Only those components of input costs have been considered for the mid-term analysis which were considered during the baseline. However, given the difference in the method followed to ask the questions during the two data collection periods, will bring in some degree of error in standardisation.

Limitation: The study does not cover the consumption expenditure data of the households given the poor reliability of such data due to consumer's recall. A comparison of the last one month's expenditure on certain items would not necessarily be comparable to the baseline data. This effectively means that this assessment cannot statistically measure the change in consumption expenditure (on items such as type of food, education etc.) from the baseline to understand how the households are spending their increased income.

Mitigation measure: The assessment's objectives is not to compare the consumption expenditure of the households but to measure the increase in the incomes. However, qualitative information has been obtained from the FGDs regarding such expenditure. Moreover, expenditure on productive assets such as land, farm tools and equipment and irrigation tools has been obtained in the assessment.

Key observations from the field that guide the data analysis and the findings.

- The mid-term assessment is a process and outcome assessment aimed at understanding the progress of the program as a whole. Thus, **change in income should be viewed at a program level and not at every beneficiary level,** which may vary due to a wide variety of reasons.
- The assessment has considered the income of the beneficiaries in the last one year (August 2016 to July 2017). However, **2015 was a drought year in Rajasthan leading to negligible rabi cultivation. In 2016, heavy rainfall in the state led to flooding and crop loss. In Karnataka, rains during harvesting period in 2015 caused loss of crop to the farmers.** In 2016, it was a drought year in Karnataka. A negligible rabi cultivation in the last two years does affect the augmentation in income. Conversely, the situation will highlight the resilience of the target population built over time through contribution by the project interventions, enriching the findings.
- The SHGs in Rajasthan have been formed over a period of two years and are at a nascent stage with respect to savings and income generation activities when compared to those in Karnataka.

5. SOCIAL, ECOLOGICAL AND ECONOMIC PROFILE

This section provides the demographic profile of the population covered in the sampled project villages under the assessment. Based on household and individual data, the social and economic status of the respondents will be highlighted here. This section will provide the reader a lens to look at the data in the subsequent sections. The various characteristics of the geographical area and households will provide a base to understand the outcomes through the lens of socio-ecological parameters. A summary of the primary data on various indicators of the profile are provided in Table 4.

5.1. Social Profile

The assessment covered two blocks in the districts of Bhilwara, Rajasthan and Chikballapur, Karnataka. In Bhilwara, the sample population consisted of over 45 percent of Scheduled Castes (SC) and Scheduled Tribes (ST) and approximately the same proportion of Other Backward Caste (OBC). In Chikballapur, the concentration of SC and ST is much higher (62 percent) compared to the rest of the social groups. Given the high dependence of SC and ST groups on natural resources for livelihood, it is seen that more than 50 percent of the population is vulnerable to environmental risks, thus qualifying the need of the interventions. Moreover, 70 percent of the population in the project areas own below poverty line (BPL) ration cards, highlighting the poverty situation in the area.

5.2. Ecological Profile

The land type in the project areas in Rajasthan are undulated hilly grassland, with the presence of forest and water bodies. Forest, grassland, gorges and farmlands constitute major habitats in the block. Major rivers of this area are Mej, Menali, Khari and Lilri. The two project blocks have a substantial forest cover with total forest area over 17,000 hectare. The soil type in these areas consists of loam, clay loam, and sandy loam pebbly and stony. With respect to common land 26 percent consists of pasture land, 14 percent is forestland and close to 60 percent is revenue wasteland.

The area falls under the Central Plateau and Hills Region agro-climatic zone with major crops are maize, soybean, sorghum, wheat, lentils, millets, mustard, sesame, ground nut and cotton. The average annual rainfall in these two blocks is 656.97mm. The total irrigated land area under the two blocks is around 95,000 hectare with agriculture dependent mainly on rainfall for irrigation. This makes agriculture highly vulnerable to climate variability and change which may lead to stress situations such as droughts, affecting the livelihood of the population.

Chikballapur is a land locked district in the central part of peninsular India covered by a hard rocky terrain. There are no perennial rivers in Chikballapur. The district is drained by three river basins namely Palar, Ponnaiyar, and Pennar which are small rivers and carry water only during the rainy season. The district owes its prosperity and development to the existence of ancient tanks for storage of water. There are as many as 1243 tanks located in the district. The main occupation of people is agriculture. In the absence of surface water irrigation system ground water is the main source of irrigation.

Close to 11 percent of the total area in the district is covered by forests and 68 percent is under cultivation. Another 28 percent of the land is uncultivated. The predominant crops grown here

include finger millet, groundnut and pulses. Paddy, mulberry, sugarcane, potato and other vegetables constitute the irrigated crops. The area irrigated by wells constitutes 99% of the total irrigated area. Mango and grapes are cultivated for commercial purpose in the district. Dug well irrigation practice is largely replaced by bore-well irrigation.

5.3. Livelihood Profile

The population in the project areas in both the states are traditionally dependent upon agriculture and rearing livestock for their livelihood. Close to 85 percent of the population are small and marginal farmers and supplement their income with income from wage labour in the form of agricultural labour on other farms and casual unskilled labour in nearby mining and construction sites and distant towns. Less than 2 percent of the households reported to be engaged in non-farm business activities such as shops, small scale repairs, contracting and plumbing.

The households are highly dependent on common land and forests for fuelwood and fodder with more than 90 percent households reporting to use common land for the same. In Karnataka, more than 80 percent of the households collect the broom grass from common areas to be sold for making broomstick, which adds to the income of the women in the households. Livelihood of communities living in close proximity of forest area greatly depends upon collection of forest produce from these areas. Fodder from common land is a key element in augmenting their incomes without which they will have to incur an expenditure to buy the same from the market, adding to input costs of rearing livestock. Traditionally women of the households take care of the livestock along with the household work. Availability of grazing pastures and common water sources such as cattle ponds, is essential for the women as it saves them from the drudgery of fetching fodder and water for the animals.

More than 90 percent of the households reported to have MGNREGA job cards as it supplements their household income. The average number of days of work availed in Rajasthan under the scheme is 60 days, while that in Karnataka was 26 days. It was observed that the wages received under MGNREGA in Rajasthan were, on an average Rs. 100-120 while that in Karnataka were Rs. 210-230. The qualitative findings indicate that the villages undertake soil and water conservation measures (such as creation of farm bunds and gully plugs) and protection of common resources (such as fencing of grazing land) under these works.

Table 4: Profile of the states by background characteristics (in percentage)

Background characteristics	Rajasthan	Karnataka	Overall
Social group			
Scheduled Caste	24.5	39.5	32.1
Scheduled Tribe	20.9	22.5	21.7
Other Backward Caste	46.9	11.0	28.8
General	7.7	27.0	17.4
Average household size	5.9	4.8	5.4
Type of house			
Kachha	24.5	24.5	24.5
Semi Pucca	34.2	0.0	16.9
Pucca	41.3	75.5	58.6

Background characteristics	Rajasthan	Karnataka	Overall
Ownership of ration card			
BPL	41.3	99.5	70.7
APL	58.7	0.5	29.3
Ownership of Aadhaar card	100	85.5	92.7
Access to MGNREGA			
Ownership of MGNREGA Job Card	98.5	87.5	92.9
Average number of days of employment from MGNREGA	60 days	26 days	44 days
Source of drinking water			
Piped water	23.0	83.0	53.3
Borehole/ hand pump	36.7	8.5	22.5
Well	31.1	0.5	15.7
Others	9.2	8.0	8.6
Main source of cooking fuel			
Fuelwood	98.0	85.5	91.7
LPG	1.5	13.0	7.3
Others	0.5	1.5	1.0
Ownership of agricultural land			
No land	7.1	14.5	10.9
Marginal and Small	92.3	78.0	85.1
Medium and Large	0.5	7.5	4.0
Dependence on common land for fodder and fuelwood	90.3	99.0	94.7

FOSTERING PARTICIPATORY GOVERNANCE OF NATURAL RESOURCES: SOCIAL OUTCOMES

6. FOSTERING PARTICIPATORY GOVERNANCE OF NATURAL RESOURCES: SOCIAL OUTCOMES

The economist Amartya Sen recognises the inherent value of participation in the development process, in his book *Development as Freedom* (Sen 1999). According to Sen, this development process, includes a range of valuable freedoms, such as the freedom to participate meaningfully in public affairs. Sen argues that the freedom to participate in the process is a means to achieve other freedoms that lead to valuable outcomes (e.g., access to economic, social and legal security[13]). Hence, participation has the potential to achieve more efficient and equitable outcomes in many different contexts of decision-making, such as allocation of budgetary resources, management of common property resources, and delivery of community services.[14]

The project interventions, by design foster community participation as collective action forms one of the pillars of the socio-ecological approach. Central to the project interventions is building and strengthening local institutions as the centrality of sound institutions and good governance allows for an effective management of common pool resources and environmental services. Recognising the critical importance of people's participation for success of livelihood initiative centred on natural resource management, the project is directed towards facilitating equity and inclusion in its processes. It is observed that the poor and vulnerable sections of the community, especially women, are often left out of such collective forums due to their low negotiating power as dictated by social norms. The project has aptly considered this issue in its design and undertaken several measures to ensure equal participation. This section, will examine the nature of the institutions created, their roles in augmenting the livelihoods of the communities and the platform they create for an inclusive governance of natural resources.

6.1. Village Level Institutions: The Roots Behind Collective Action

The VLIs, formed and strengthened in every project village, constitute the core of the project as they are the central institution of decision making for natural resource governance in a village.

6.1.1. Institutional Structure of the VLIs

By design all the villagers are a member of the VLI and are eligible to participate in its meetings and decision making process. The VLIs have an executive committee of 11 members which include at least one member from each of the communities in the village and a minimum of three women from the village. These members are elected through a democratic process providing equal opportunity to the village members to elect a person from their community.

The VLIs meet at least twice a year before the *gram sabha* is held, to discuss and finalise village development plans before presenting them in the *gram sabha*. The executive committee meets once every month or as required. The agenda ranges from deciding on the beneficiaries for livelihood activities, preparation and approval of village plans, work monitoring under MGNREGA, and management of issues related to management of CPRs of the village. As per the

13 Amartya Sen's Development as Freedom: Ten Years Later, Dennis O'Hearn, 2009, Policy and Practice: A Development Education Review

14 Participatory Governance: An Overview of Issues and Evidence, Siddique R. Osmani, University of Ulster, UK, 2007 | Published under Participatory Governance and the Millennium Development Goals (MDGs), Based on Expert Group Meeting on Engaged Governance: Citizen Participation in the Implementation of the Developmental Goals including the Millennium Development Goals (MDGs)

data provided by FES, 485 VLIs have been formed as against the target of 410 till the end of second year of the project (2016).

VLI members,
Pokamakulupalli village
Chikaballapur, Karnataka

Source: NRMC

6.1.2. Roles and responsibilities of the VLIs

The VLIs have been formed to bring together the community to address common needs and issues for overall development of the village. Degradation of common natural resources, depletion of water levels and poor access to social security schemes were some of the key concerns of the target areas which required a common platform for deliberation. The VLI provides a platform to prioritise needs, analyse potential pathways and arrive at feasible solutions through participatory discussions. These solutions emerge as a perspective plan for the village which specifies the various development activities to be undertaken in the village with respect to conservation of commons and construction of natural infrastructure.

A. Preparation of perspective plans and by-laws

The preparation of perspective plan is preceded by mapping of the village's boundaries, its habitations and all the natural resources such as water bodies, grazing land and forests. The situation is analysed by the VLI members bringing out issues related to, for example, reduced water level in common ponds, illegal encroachment of common land, deterioration of common land due to overgrazing, poor availability of firewood, and limited work under MGNREGA. Matters are discussed and appropriate solutions are arrived which are sometimes, pretested before being entered into the perspective plan. The plans are then broken down into annual plans and includes the works that need support of various Government schemes (such as MGNREGA, and NRHM) to realise them. These perspective plans are then presented in the *gram sabha* for approval and inclusion in the action plan. Until 2016, 338 such perspective plans (as against the target of 460 plans) have been prepared and approved by the VLIs which include the livelihood plans and required MGNREGA support in detail. The remaining 122 plans were submitted to the Panchayats in January 2017 and thus, do not reflect in the monitoring data.

"We have protected our pasture land which is mostly rocky and therefore not fully covered with vegetation. But still there are lot of seetaphal and Neem trees whose fruits we harvest and sell in the market. There is lot of illegal mining going on in the adjoining villages and now that they have almost razed their hillocks to ground, are looking at our patch for exploitation. Though we are resisting we will need support from the GP and the government department in our fight"

-VLI member, Jogireddypalli village, Bagepalli, Chikballapuram, Karnataka

The VLIs also prepares by-laws to govern the commons which keep evolving as the nature of issues faced changes. These by-laws include guidelines for participation in the executive committee, preference to women for appointment as NREGA mates, fine to be levied on misuse of commons, and incentive structure for reporting such misuse. As per the monitoring data provided by FES, 370 VLIs have created their by-laws by the end of 2016, as compared to the target of 460. The process of developing by-laws was underway in the remaining 104 habitations.

This process of creating by-laws becomes challenging when the common resources are shared with other habitations and here the role of the *gram panchayats* becomes very critical to resolve matters. One such incident was raised in Jogireddypalli village in Bagepalli, Karnataka, where the VLI stated their concerns over encroachment from adjacent villages for mining. They have approached the Gram Panchayat for support in their fight and are awaiting any action from them.

In a similar case in Barundi village, in Bhilwara district of Rajasthan, the villagers through various plantation and conservation activities, have been able to restore the forests that lay within the boundaries of their village. However, they faced multiple issues of encroachment from one of the neighbouring village in Chittorgarh district. They assessed the risks and collectively decided to protect their forest and grazing pasture by closing the area by phases. Approximately five to six men and women from the village volunteered to patrol the area on a daily basis to stop encroachment from other villages. In a matter of few months, the neighbouring village understood the strength of the committee and the village and now, do not use those pastures for grazing.

In Thana village of Bhilwara, the VLI through such regulations, has been able to protect over 40 acres of common land from which the villagers are now able to collect fodder for over five months. Another 57 acres of land is kept under protection during the grazing months in the former pasture, and is opened for grazing for four months. Thus, the villagers now have access to grazing land for nine months, reducing their expenditure on fodder, which augments their income. Moreover, women do not need to fetch fodder from other habitations and send their cattle or small ruminants to their own village pastures for grazing. As reported by some women, this saves their time which they can use to rest or go for wage labour.

B. Conservation and restoration of common lands

Through implementation of their perspective plans, the VLIs have been able to undertake construction of water harvesting structures such as anicuts, contour trench and check dam on the common land of the village by leveraging MGNREGA funds. This has resulted in improved rain water harvesting due to which the ground water table has risen and water is available in the common ponds for animals. This has benefitted the village as all households have benefited from these interventions.

In Karnataka, the participants of an FGD in Jignavandapalli village in Bagepalli block of Chikballapur reported, *"In earlier times villagers used to have an annual ritual of taking tank silt to their farms which helped in maintenance of the water harvesting structure as also improved the fertility of their soil. But changes in the tradition have meant that these practices had almost been abandoned mainly because of labour shortage. But thanks to MGNREGA again these kind of practices are getting revived and it is helping us all."*

Water harvesting structures in common areas created by utilising MGNREGA, Bhilwara, Rajasthan
Source: NRMC

However, at a household level, interactions with farmer groups and SHGs highlighted that while some farmers have been able to take up soil and water conservation measures such as farm bunds and gully plugs under MGNREGA, many farmers are yet to reap that benefit. The farmers attribute this to the slow pace of implementation of MGNREGA in many of the *Gram Panchayats* even though it is such a useful activity. They expressed the need for the VLIs to continuously work with the gram panchayats in timely implementation of shelf of work for farm related construction as well. While the scheme has played a role in conservation of the natural resources by providing funds for undertaking restoration work on these resources, its effectiveness has been reduced by delay in preparation of estimates, sanction of works and delay in payment of wages which has diminished the interest of its primary stakeholders. Thus, the VLIs have an emerging role to play in making the gram panchayats more accountable for strengthening the implementation MGNREGA.

C. Facilitate access to other social security schemes

Apart from protection and regeneration of common lands, the VLI also helps the households to access social security schemes which include pension and housing schemes. In Thana village of Bhilawar district, Rajasthan, the VLI highlighted their collective action against the pilferage that was taking place in the village PDS shop. They organised a public hearing of the case in which they invited the relevant government officials for effective resolution of the issue. Through their efforts, the PDS shop is now run by another entity in the village with no leakages.

FES plays a role of a facilitator in the formation of the VLIs supporting them through capacity building of the members and enhancing the knowledge of the VLIs through awareness programmes. It is remarkable, that FES signs a *terms of reference* with the VLIs which makes FES a stakeholder in this development process, providing its support as per the terms of reference. The capacity building programmes on sustainable agricultural practices and social security schemes help the VLI members in understanding the resources of their village and accordingly plan for their village development. The trainings and exposure visits allow the VLI of different villages to interact with each other and exchange knowledge and best practices. These trainings thus act as a learning tool for the VLIs to improve upon their perspective plans and identify newer pathways of resolving the challenges that they face. Until 2016, more than 3300 such trainings had taken place which exceeded the target of 2250 trainings.

6.1.3. Ensuring equity in participation

Some of the key issues highlighted during the formation of VLIs include concerns of elite capture where the institution is dominated by the dominant members of the village and, participation of women in decision making considering the social norms of the villages. These concerns of inclusion and gender equity are addressed partly by the structure of the institution and partly by the nature of its roles. The VLI focusses on common needs and issues that concern management of natural resources such as forests, grazing lands and water bodies and increasing access to social security schemes. These issues affect the livelihoods of entire village and in particular, that of the poor. Thus, the nature of the problems brings together the communities to discuss the alternatives and allows for natural exit of those members who are not affected or are not interested in these issues. Moreover, the constitution of the executive committee of the VLI is such that it is represented by at least one member from each community.

> *"My family is the only Muslim household in the village and I am a member of the committee. I have a say in the working of the committee which makes me feel included in the village related decisions."*
>
> -Member of the VLI Executive Committee
> Pokamakulupalli village, Sidleghatta,
> Chikaballapur, Karnataka

A. Participation in VLI meetings

The data from the mid-term assessment suggests a high participation in the VLI meetings indicating its perceived importance by the villagers. Over 85 percent of the households reported to participate in the VLI meetings. Out of these, close to 40 percent reported to attend the meetings regularly and 45 percent reported to attend them sometimes. However, three-fourth of the population felt that their needs and interest were heard and taken into consideration during the meetings. This indicates the satisfaction of the village members with such an institution where they find common interests that affect their livelihood. One of the participants of an FGD in Kareda village of Rajasthan mentioned that the VLI meetings are very informative and as a farmer he gets to know a lot about the ongoing government schemes and how to apply for them. In addition, he

felt that in the forum, his questions are authorised and noted as there are other members from the village who also have similar queries. The control villages do not have such VLIs and are dependent upon the panchayat to undertake any actions. In Latala village, Rajasthan (control village where the intervention has not taken place), the farmers did indicate the need for institutions so as to work together on increasing ground water levels and improve the distribution of ground water. However, they felt that they did not have adequate knowledge and support to create such an institution.

B. Gender equity in participation

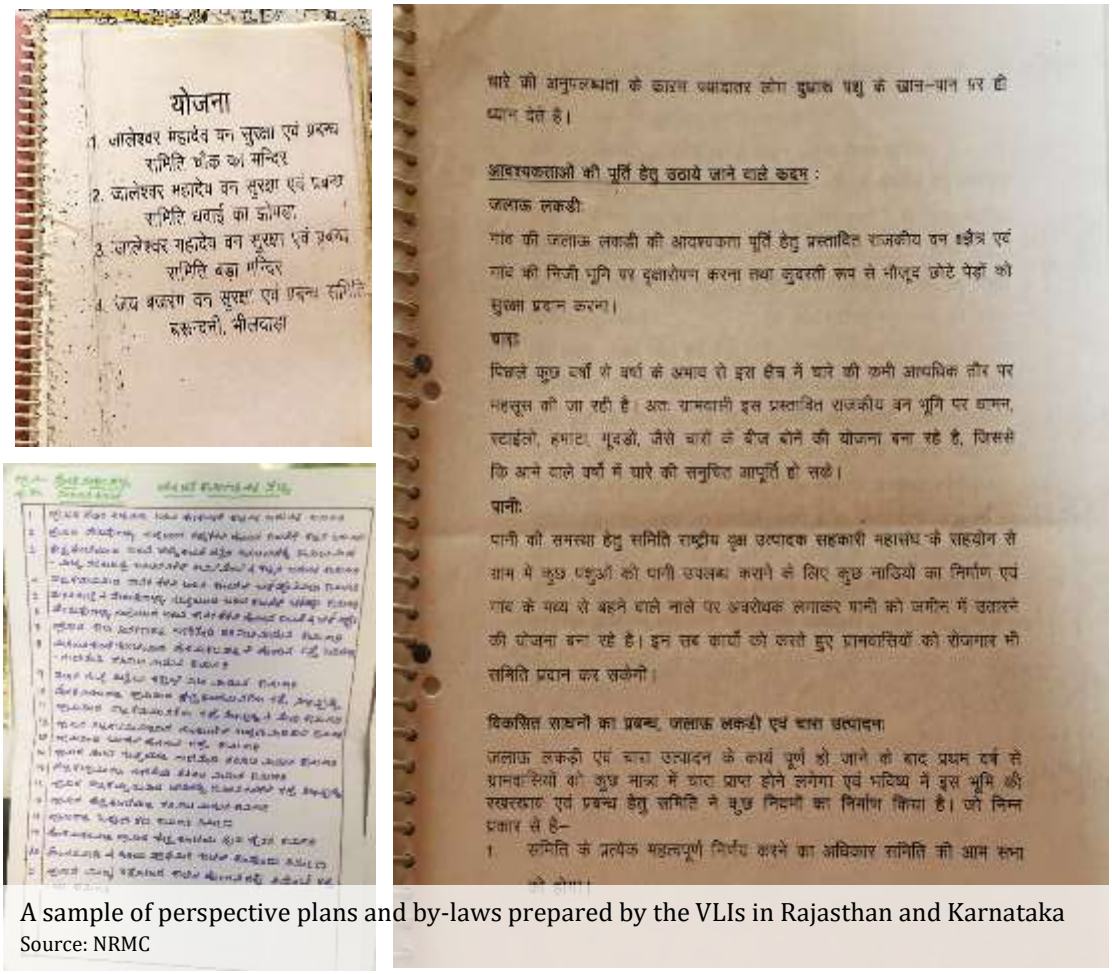
The VLI by design includes three women in the executive committee and includes then in the VLI meetings by virtue of being a member of the village. Women's participation in the VLIs is essential as women are significantly dependent on common resources for fuelwood, fodder, timber, forage, food, drinking water for animals and other household requirements. Hence, their voice is necessary to inform decisions that will eventually affect them. Many VLIs support women to be nominated as MGNREGA mates to help their social and economic status.

Through discussions with SHGs and VLIs, it was observed that women's active participation in the VLI meetings needs more concerted efforts from the community and needs to be led by the VLI executive members. The qualitative exercise indicates that participation of women in VLI meetings in Karnataka was higher when compared to that of Rajasthan. Some of the women in Rajasthan reported that while they attend all the meetings, often they don't find the confidence to voice their concerns in the public forum. While this is not the case in all VLIs in the state, but considering the social norms that surround women's mobility and autonomy in Rajasthan, more needs to be done by the VLI members to encourage women to articulate their concerns in a more participative manner. The members of the SHG from Barundi village, Rajasthan stated that they found it easier to speak out during SHG meetings than in the VLI meetings, as in the latter they are shy of expressing their opinions in front of male members (often elder) of their community. In Karnataka, the SHGs in the villages are quite experienced and provide a platform to women to discuss their issues and identify solutions, thus empowering them with awareness and confidence to speak up. In Rajasthan, the SHGs are at a nascent stage in its evolution and with time are expected to empower the women to voice their opinions in other forums.

VLI Meeting in progress, Chikballapur, Karnataka
Source: FES

However, more action is required by the VLIs to understand the role that women can play in strengthening the processes and outcomes of the perspective plans. In Pokamakulupalli village of Sidleghatta block in Chikaballapur, Karnataka, a discussion with the male members of the VLIs highlighted their concerns with burdening women further with responsibilities, if they were to participate actively in the meetings. One of the members said, *"Women are already burdened with so much work. They take care of the house, tend to the livestock and take care of our daily needs. The work of the VLI needs time and dedication and they (women) may not be able to handle it."* While their intention is to ensure that women are not overburdened, the attitude does undermine the importance of engaging women fully in the process. Towards this, the project needs to build a nuanced gendered approach in its trainings to sensitise the VLI members of the key roles of women in such institutions.

Some of the key inputs received from the VLI members towards improvement in their institution points towards efforts to make agriculture a more viable option of livelihood as the youth of the community are increasingly moving towards the cities because they do not consider agriculture as a profitable occupation. They added that with better awareness regarding fair prices for their crops, access to market linkages, and credit support would be instrumental in improving outcomes of agriculture. The qualitative findings indicate that the women, in both the states, highlighted the need of their increased role in decision making especially with respect to the maintenance of common resources given their high dependence on it. In a FGD with a SHG in Thana village of Rajasthan, the women mentioned that with more of them participating in the VLI meetings, their awareness of local issues, their negotiating power and their decision making capabilities will increase, helping their social and economic situation.



A sample of perspective plans and by-laws prepared by the VLIs in Rajasthan and Karnataka
Source: NRMC

6.2. Community Resource Persons: Change Agents for Development

The project has facilitated the development of a cadre of Community Resource Persons (CRPs) by building local capacities to develop and manage local resources on a sustainable basis and improve service delivery. These CRPs are capacitated with the skills needed to connect village institutions or Panchayats to development opportunities and improve local governance, especially that of natural resources[15]. The CRPs play a pivotal role in supporting the VLIs in gaining skills and knowledge to fill the information gaps at village habitation level, mobilising local communities for collective action and enabling improved leverage and implementation of government schemes.

6.2.1. Process of selection, capacity building and roles of CRPs

The selection of CRPs is led by the VLIs or Panchayats, based on their assessment of the skills, integrity and leadership potential of the person. The criteria include selection of people from the same Panchayat who would know all the habitations in and around the Gram Panchayat to be assigned to them with preference to those with prior experience in data collection, writing minutes, and any other relevant work experience. The VLI also passes a resolution at their level regarding the selection, roles and responsibilities of the CRPs, their remuneration and how their work would be monitored. The performance of the CRPs is evaluated by the VLIs as per the execution of the monthly plans. The village institutions also monitor their performance in their presence so that the CRPs are made aware of their accountability.

The CRPs mobilise the community for meetings organised in the village; assist the VLIs with planning, identification and submission of work plans under MGNREGA; assist the gram panchayat in creating demand for work, mobilise wage seekers for work, monitor the work execution under NREGA; liaison between the Panchayats and local government officials with respect to work in the village; support the Panchayats in recording information and undertake surveys; and function as a field trainer on topics such as sustainable agricultural practices, book keeping in SHGs among others.

Towards this, the CRPs have undergone a wide variety of trainings conducted by FES and *Prakriti Karyashalas* (Rural Colleges), established to cater to the learning needs of the community members. The Karyashalas impart capacity building programmes to build local stewardship for improved natural resources management. The CRPs are trained to cater to a variety of needs of rural communities such as understanding development needs of the community, planning for them, building links with different non-government organisations and government officials to meet their needs. The objective of these trainings is to make CRPs the local stewards, concerned about their local area and its issues and dedicated towards working for the development of their villages.

The CRPs in the field reported that usually two to three days of training is held in different venues across the districts where FES is in operation. The CRPs reported to find the trainings quite interactive and not just theoretical which helped them in grasping the concepts faster and better. These trainings also cover sustainable farming practices such as line sowing, seeds replacement, mixed cropping, creation of *amrit paani* (organic manure), and use of newer breeds of livestock. With the help of this knowledge, the CRPs impart trainings to the farmers which has helped them

[15] Retrieved from project data provided by FES.

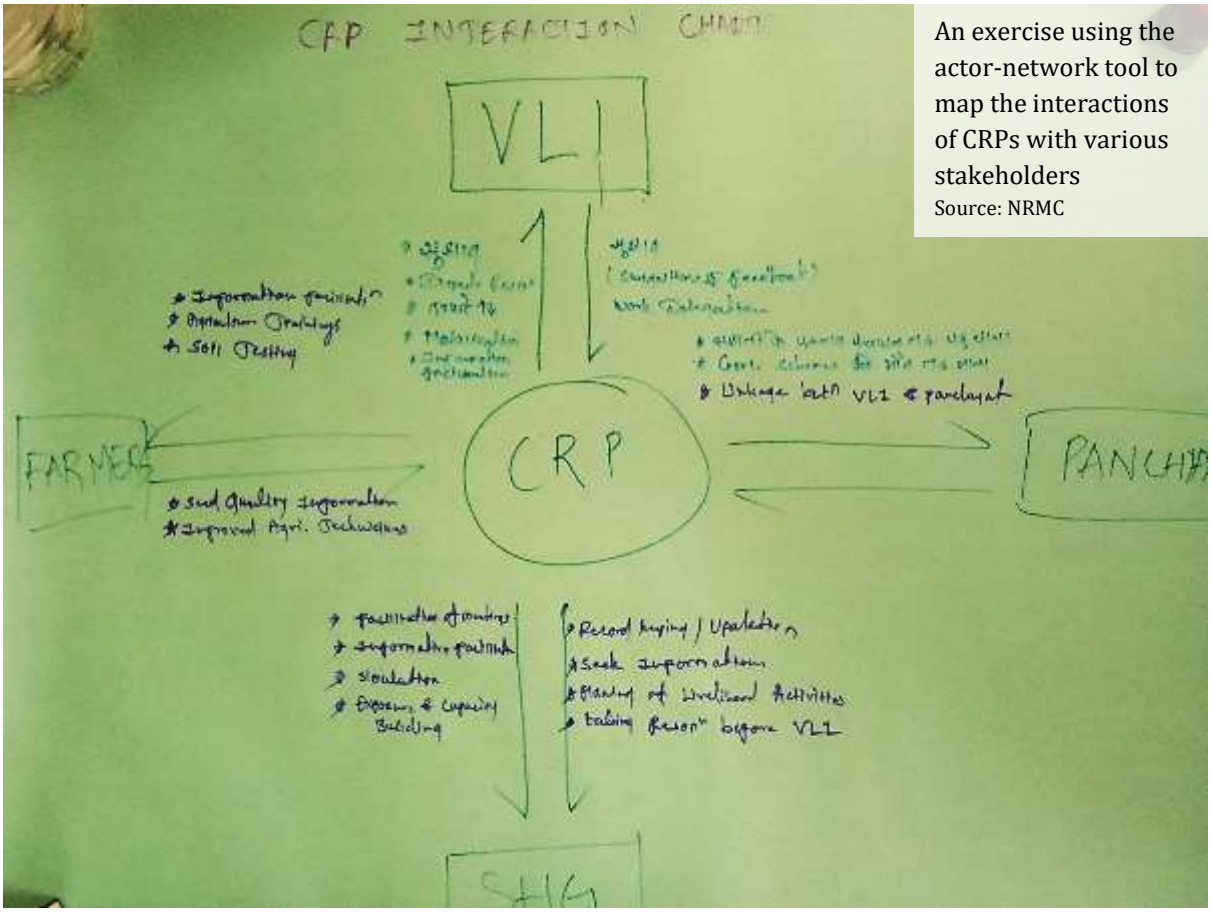
gain trust and respect among the farmers, some of whom have adopted best practices on cultivation.

The CRPs indicated that without these trainings, they did not have any idea regarding the work that was at their hand. Now, with tools such as the Composite Land Restoration Assessment and Treatment Tool (CLART), CRPs are able to assist communities in the planning of soil and water conservation measures, crop water budgeting for creating awareness related to efficient water use and, mapping their commons and undertaking the process of claiming the land tenure. They have facilitated the mapping of village resources and drawing boundaries of village common lands. Further, through their inputs they support the VLIs in taking decisions related to placement of water harvesting structures such as anicuts, check dams, contour bunding and land levelling. They further support the VLIs in drawing the perspective plans post such decisions with inputs on ways of budgeting for such constructions under the government schemes.

The CRPs regularly meet among themselves at cluster level, where they exchange ideas and learnings. The forums act as a knowledge exchange platform and support system, as well as a way of performance evaluation.

6.2.2. Promoting social dialogue with households, SHGs and VLIs

The CRPs over the years have engaged extensively with individual households to support them in accessing the benefits of social security schemes, subsidies for agricultural inputs such as seeds and fertilisers and scholarships for students to continue their higher education. Apart from creating awareness on the benefits of the schemes, the CRPs reported to help the households in filing the applications and submitting relevant documents for the same. The CRPs also interact with the farmers to train them on better agricultural practices and encourage them to adopt these to improve their production and productivity.



An exercise using the actor-network tool to map the interactions of CRPs with various stakeholders
Source: NRMC

"Initially, people would not trust us. It took us some time to develop that trust. Now, many farmers have adopted certain practices that we told them about which have worked well for them. When they appreciate us, we feel a sense of pride in our work."

-FGD with CRPs in Mandal Block, Rajasthan

A. Communication with households

In communicating with households, the CRPs reported to face challenges in gaining the trust of the community at the first level. With time the households realised that the CRPs did not have any political agenda and their intent was to help people in securing their livelihoods. They began trusting the CRPs and started approaching them for assistance on technical matters, such as process of filing for old age pension scheme, options of sources of credit and availability of improved seed variety.

As per the survey data of the assessment, more than 87 percent of the households reported to have availed technical information related to agriculture from the CRPs in their village. Moreover, 98 percent of those who availed the advice, also adopted them and put the suggested practices into use, highlighting the reach of the CRPs. In contrast, only 21 percent of the farmers in the control villages received their information from resource persons of NGOs and were dependent more on the information from the government extension agents. However, the inadequate frequency of their visits and poor timing of their information provided little help to the farmers in the control villages.

B. Interaction with VLIs

The next challenge for the CRPs was to bring together people from different castes and communities in one meeting to have a discussion with each other. Here, they would adopt measures such as calling them to the common village temple where they would discuss issues such as degradation of common land that affect the entire village, irrespective of the communities. Such measures, brought the different communities together to address common concerns of depletion of ground water and degradation of common land. Moreover, with such meetings in progress, the CRPs also facilitated discussion around the solutions which included protection of common land through fencing, regulation in use of firewood from forest land and crop water budgeting to improve ground water level.

The VLIs appreciate the work undertaken by the CRPs and reported that the CRPs play a vital role in preparation of the village level plans and act as a critical link between the VLIs and the gram panchayat and other government officials for better implementation of government schemes and improved service delivery. One of the VLI members from G.Kuruburahalli village in Sidleghatta block of Karnataka, stated, *"The CRP's have provided information with respect to schemes related to social security schemes of the government, programmes related to agriculture, MGNREGA and sanitation programme among others. This has helped us in coordinating with GPs and government departments for taking up developmental activities in our village. The CRPs played a very key role in the preparation of the perspective plans."*

The CRPs indicated receiving adequate support from the VLIs and the *Gram Panchayat* members as they realise, *"…. that we do not have any political affiliations or motive for our work and genuinely desire development in the village."* Now, the VLI members and the *Gram Panchayat* officials often engage with CRPs on relevant matters as they are equipped with knowledge on a wide variety of issues and also act as a link between the *Gram Panchayats*, VLIs and the SHGs.

C. Formation and strengthening of SHGs

The CRPs are responsible for formation of the women SHGs in the village and support them through training on book keeping and providing them information on smooth functioning of the group. The CRPs in Rajasthan mentioned that SHG is a very powerful institution for women. Through the SHGs women, who are mostly confined to their individual households, are able to come together and discuss matters that concern them. While initially they would not speak much, they now seek information from the CRPs on matters such as birth registration, immunization and other forms of livelihood. The CRPs have also shaped the discussion amongst the women around protection of common property resources, which were earlier taken for granted by the women. The SHGs, with support from the CRPs now advocate for following the by-laws shaped by the village and in some places also demand for fodder to be planted in the common land as it is beneficial to the households.

> *"Even if we do not earn much the fact that this work has helped in building a distinct identity for us has been a great motivation. From just another person in the community to someone who is able to motivate and guide communities in three to four villages and is recognised for that. And who knows tomorrow I may even stand in for the election to the local bodies!"*
>
> CRP, Mandalgarh, Bhilwara, Rajasthan

6.2.3. Sustaining change through social and political awareness

The project model has mobilised a cadre of local resource persons through capacity building of CRPs who support the village in managing their local resources and sustaining their livelihoods through improved service delivery. The discussions with SHGs, VLIs and farmer groups indicated the felt impact of the work of CRPs on the social, ecological and economic aspects of the village as a whole and households as individual units.

In turn, the CRPs, who are paid an honorarium ranging from Rs. 4500 to Rs. 5500 per month[16], have been instrumental in engaging with the VLIs, SHGs, *Gram Panchayat,* government officials and the households. The CRPs reported that even though the economic benefit of this work is low, the work has brought them recognition in nearby and sometimes even far away villages, that is beyond any monetary compensation. One of the CRPs in Siddlaghatta block of Karnataka stated, *"Earlier we were one among everyone but now we have been able to carve out a separate identity for ourselves. People give us so much respect that we feel motivated to continue our work."*

The CRP of Barundi village, Bhilwara, Rajasthan explaining the planning process of protecting the grazing land
Source: NRMC

[16] All the CRPs do not receive the same income every month and it is also based on the number of years of service they have put in.

A. Motivating factors at work

The CRPs in both the states highlighted that they are able to see the tangible result of their contributions in their villages, which is one of the biggest motivators for them to do this work. One of the CRPs in Bagepalli block of Karnataka described his own experience in this lights stating, *"I was able to facilitate horticultural works in a marginal farmer's land under a Government programme. Today, two years later when I pass by his land and see that the plants are coming up well, I feel really happy that I was able to touch the life of a farmer!"* Many CRPs, in Rajasthan also highlighted their efforts towards mobilising women to attend the VLI meetings. One of the CRPs in Mandal block, Rajasthan described the situation now, compared to a few years earlier, saying, *"Earlier, women would give excuses of their household work and not attend the meetings. Also, the societal norms made it difficult. Today, the women attend the VLIs meetings whenever they take place. This has been possible by our continuous effort towards convincing village leaders about the importance of their participation."*

The CRPs also feel that the trainings have helped them develop personally as well, imbibing self-confidence in them to address issues that concern their villages. Moreover, with the capacity building of the CRPs, they are empowered to be absorbed into other government programmes as well. Many persons who had worked as CRP earlier have been empanelled with the MGNREGA programme as barefoot technicians and they feel that this opportunity has come across their life due to their good work as CRPs.

B. Emerging requirement of support by the CRPs

Many CRPs expressed that their role is very demanding and does take up a lot of their time. While they are able to tend to their farms during the agricultural season, the rest of the year their work demands numerous interactions with the villages, documentation, site visits and monitoring of MGNREGA works, maintenance of books with the SHGs and visits to panchayats and block for augmenting approvals and services. Due to this, they did highlight their need of a higher compensation, especially for the travel that they undertake.

The study team observed that the roles of a CRP are demanding in a way that they cannot be completely fulfilled by a woman who has to take care of her household as well. The sheer volume of work and travel is one of the reasons that women CRPs are very low in numbers under the project. The few women who work as CRPs mentioned the inconvenience that they face sometimes in attending meetings that may be held late in the evenings in villages other than their own. They expressed their need for support in the form of another CRP who can spilt their work with them. Some of the SHG members who are more proactive in the village developmental work cited certain alternate propositions. They mentioned that between a male and a female CRP, the kind of work may be split. Women CRPs can cater to the SHGs and undertake village level activities. Alternatively, they said that within a village, the CRPs can be supported by a female resource person. Such a measure also bodes well for the empowerment of the women by being a part of the process of change.

Other concerns highlighted by the CRPs included the delay in initiating activities due to which the villagers may sometimes lose their interest, particularly in case of MGNREGA. Also, initiating their work in a new village is also challenging as the villagers take time to trust them and even each other. But the CRPs were motivated to handle these challenges and place their trust in the trainings provided to them.

Notably, the CRPs have emerged as a critical change agent in grassroots democracy in the project areas. Increased social and ecological consciousness among the volunteers also has led to their proactive contribution toward the overall development in the villages. Through gaining trust of the community, these CRPs are effectively fostering a behaviour change among the farming community vis-à-vis adoption of improved farming practices; among the communities by supporting collective action towards protecting their commons; and among women by raising their awareness and promoting their empowerment.

"Today all the households in our village have a toilet because of the effort and initiatives taken by me and others in the village. It was difficult initially but our persistence paid off. Water availability is still an issue and we intend to work on that next."

-CRP in Bagepalli, Karnataka

The CRPs have played an instrumental role in conserving the natural resources of the villages, helping restore the degraded common lands. In Pokamakulupalli village Chikaballapur, Karnataka, the CRPs have supported the VLIs in reducing encroachment from other villages for stone mining, resulting in increase of forest cover.
Source: NRMC

6.3. Self Help Groups: Fostering Women's Participation

Formation and strengthening of SHGs is an instrumental step of the project towards a twin aim of empowering women and expanding its reach to the households. The SHGs act as a forum for women to meet, interact and, gain and share information, and identify common interests for collective action. The SHGs have been established with an emphasis on developing access to micro credit and promoting micro enterprises. Under the project, the SHGs are seen as a unit under the VLIs wherein the business plans for the SHGs are approved by the VLIs based on their ecological sustainability, within the existing natural resources.

While in Rajasthan new SHGs are being created under the project, in Karnataka the project is working with already established SHGs (formed by other NGOs or under other government programmes) to avoid any duplication. As per the monitoring data furnished by the implementing partner, until 2016, 808 SHGs have been formed as against the target of over 1300 SHGs. Discussion with the project team of FES revealed that the formation of SHGs, particularly in Rajasthan, remain a challenge because of the bad experience of the community with SHGs in the past. Due to prior default on loans many households are not eligible to be a part of the SHG, thus increasing the time taken to create these institutions which also require the support of credit institutions.

6.3.1. Membership, meetings and activities

The survey findings reveal that most of the SHGs have members from different communities. Compared to the baseline, it was observed that there is a significant increase in the number of households who reported to have a member as part of an SHG. Notably, only 18 percent of the households from control villages reported to be a part of an SHG. This difference highlights the efforts of the project activities in building institutions that cater specifically to women.

Table 5: Proportion of households who reported to have atleast one member as part of the SHG (in %)

State	Baseline	Midline (Project)	Midline (Control)
Rajasthan	13.8	24.5	-
Karnataka	34.5	48.0	-
Overall	25.7	36.4	18.3

More than half of the SHGs under the project are 2 years or less than 2 years old. This is because, in Rajasthan the SHG formed are relatively newer compared to Karnataka, where almost 45 percent of the SHG are more than 2 years old. Discussions with the SHGs in the field highlight the difference in capacities of the relatively newer groups when compared to that of older groups vis-à-vis their participation in decision making at the village level. Most of the SHGs have weekly meetings which are rarely missed by the members. On some occasions the meetings are very brief with the main purpose of collection of the weekly savings. On other occasions, the SHGs sit for longer durations and discuss issues related to their household and the village in general, the functioning of their group and how they could take forward its activities in a manner that benefits all the members.

Every week a fixed amount of savings is deposited by the members. More than 70 percent of the households reported that they have a monthly savings between Rs. 50-100 in their SHG, amounting to an average annual saving of Rs. 600-1200. The data from the MIS of the implementing partner states that until the end of 2016, the SHGs under the project had close to Rs. 67 lakhs of savings amount, compared to the target of 90 lakhs. Most of the SHGs reported to have a bank account that they either operated themselves or with the support of the CRPs. The CRPs also assist the SHGs in maintaining their account books.

The SHGs have received trainings from the CRPs on topics related to group functioning, inter-group loans, bank linkages and income generating activities. The project has also engaged in training the SHGs on animal husbandry with one such training in 2016 wherein 330 SHG members in Rajasthan were trained on collective management, functions and animal husbandry through the animal husbandry department of Chittorgarh. Most of the SHGs, visited during the field work, pointed towards the need of further trainings on income generating activities such as *papad* making, basket weaving, tailoring and processing of agriculture produce. Such inclination to learn also highlights that the members are keen to build their own enterprise for economic benefits. One of the SHGs in Kambalahalli village, in Chikballapur district of Karnataka pointed out, *"We have seen some activities when we were taken for an exposure to a village in Kolar district and we felt confident about doing something similar here in our own village. It's just that we need little financial help either from the bank or FES to initiate it."* The SHG is currently in the process of developing their business plan with the support of CRP in the village.

Table 6: Proportion of households who reported the reason for taking an internal loan (in %)

Purpose of taking the loan	Rajasthan		Karnataka		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Consumption	39.4	81.2	32.8	42.3	33.4	57.1
Enterprise	60.6	18.8	67.2	57.7	66.6	42.9

The members have undertaken internal loans within the SHG at an interest of one or two percent per month for various consumption purposes to cover educational and health expenses, buy inputs such as seeds for agriculture, and sometimes, repayment of debts. Table 7[17] highlights that compared to baseline a higher proportion of the loans, especially in Rajasthan are being taken for consumption purposes. The newer SHGs first focus on use of their savings for taking care of pressing household needs. With time, SHGs evolve and begin to identify economic opportunities for taking such loans. As part of the enterprise, most households reported taking loans from the SHG for purchase of livestock, particularly goats and sheep.

In discussion with SHG in Bagepalli, Chikballapur, Karnataka
Source: NRMC

[17] The table presents data obtained from the sampled households and not the SHGs. Thus, the inferences drawn reflect observations at a household level.

The SHG members reported that by virtue of their savings, and support from the group, they are now able to take care of certain household needs which earlier was not possible. Moreover, the loans from SHGs saves them from the clutches of the money lenders and their high interest rates. A member of the SHG in Barundi village, Bhilwara, Rajasthan spoke about the immense support received from the SHG when her son had to be operated for some medical issue and the SHG, understanding her critical situation, lent her some money that took care of the emergency. The women also pointed out that, since all the women in the SHG know each other's household situations, they are empathetic of the conditions and the internal loans are given based on which household needs it the most.

With support from ABF, the VLIs provide the SHGs with a revolving fund in the form of a loan at a mutually agreed interest rate, to initiate any livelihood activities. Within the SHGs the women from the poorest of households are identified first for assistance and are provided with the seed money to buy small ruminants of an improved breed. Once the loan is paid back by the members, other members are identified based on their needs to receive loan for similar income generating activities. However, meetings with the SHGs highlighted that in many cases, the time of return of such loan is not fixed as investments such as goats and sheep require one to two years to pay off any substantial returns. Thus, similar loans to other members from the revolving fund require a time period of more than a year, which sometimes leads to discontent within the SHGs.

6.3.2. Effectiveness of the institution on the well-being of women

Over the last three years, the SHGs have gained respect and appreciation within the village. Some of the SHGs reported to have participated in patrolling of the common areas for their protection. While, at present they do not play a direct role in the monitoring of the common property resources, they voice their agenda and issues in the VLI meetings for the same. For any work such as plantation in the common land or construction and renovation of water harvesting structures, the SHGs are also consulted. Discussion with the project team highlighted that women bring in a different perspective to livelihood in light of commons. They added that while men would want plantation of timber in the common areas, women would prefer to plant fodder grass as it is more beneficial to them for their livestock. Taking such observations into account, the project has encouraged the VLIs to seek the views and opinions of the SHGs for management of commons.

After being linked with the SHGs, the women feel that they have developed a better understanding on a wider range of issues which has brought about a small yet positive change in their thinking and behavior. With help from the CRPs they are able to educate themselves on schemes related to well-being of women and children. Their knowledge combined with savings has led to an increase in their self-esteem, which is likely to translate into better negotiating power at home. The SHG members of *Gayatri Mata* SHG in Bhilwara, Rajasthan, pointed out that with time, they have developed the self-confidence of discussing their issues outside the group as well. The SHG members have taken part in sensitizing the village about the importance of use of toilets as they feel it is a gender oriented issue. Moreover, they have undertaken a survey and helped the CRPs in identifying households who are eligible for social security schemes.

> *"The male members of our family used to take all the decisions earlier and our role used to be confined as providers of labour in the kitchen and the farm. Today after seeing us being part of these group and our increased confidence they hesitate in taking decisions unilaterally. It does not mean that all that we propose gets accepted but at least we are consulted."*
>
> *-SHG Member, G.Cherlopalli village, Bagepalli Taluka, Chikballapur district, Karnataka*

Having seen their efforts and the changes in the social status of the women, other women from the village have also approached the CRPs to help them form a SHG.

Under the project, women from SHGs are also encouraged to undertake the responsibilities of MGNREGA mates, providing them with employment opportunities. Further, initiatives such as paper-plate making for village functions, spice processing units and dairy have been undertaken by a few SHGs under the project. The assessment team documented the journey of one such SHG in securing their livelihoods in Dhapada village of Bhilwara district in Rajasthan.

CREATING PATHWAYS FOR ECONOMIC EMPOWERMENT OF WOMEN: A CASE STUDY

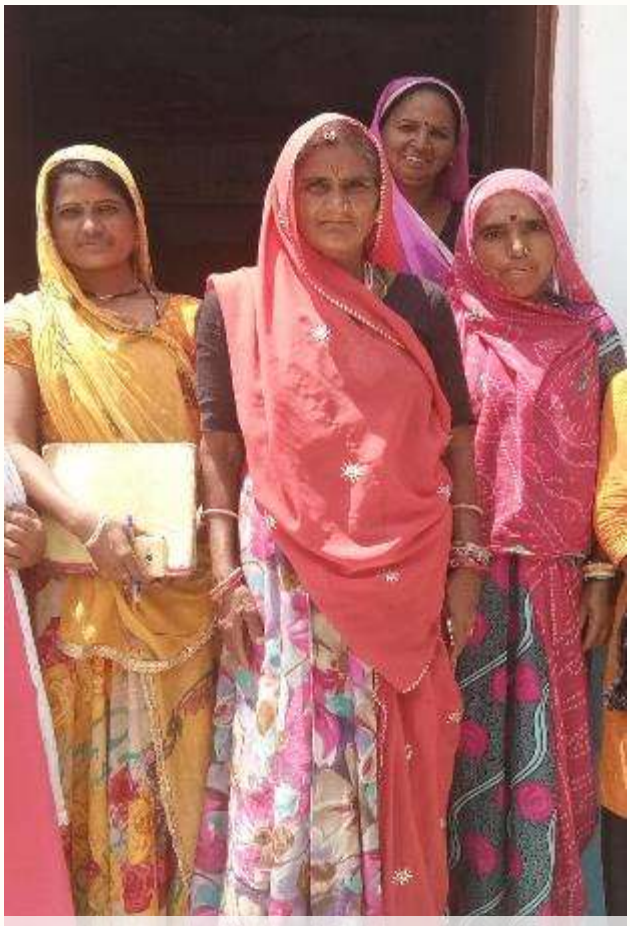
Chamunda SHG in Dhapada village of Bhilwara district, Rajasthan was formed in 2015 in a similar manner as other SHGs in the area. With a motivation to improve their lives and a desire to succeed, these 12 women have been able to carve an identity of their group, in their own as well as surrounding villages.

The SHG was created with a view of improving the economic situation of the women through credit linkages. *"Earlier, many families in the village were in debt before the SHG was established"*, says the SHG President. They had no choice but to borrow money, often for household needs including healthcare, education, weddings, from local, private moneylenders at a very high rate of interest. This was an unending cycle of debt. *"When our SHG was formed most of our households were in debt too. Slowly, with support from the FES team, we have been able to save regularly, access formal savings institutions and participate in the management of these savings"*, mentioned another member of the SHG. The SHG now collects Rs. 100/- per month from every member which has created a kitty of savings, this has allowed the members to lend money, with minimal rate of interest (one or two percent) to those members who are in need.

Sowing the seeds of change

During their meetings, the members realised that all of them had spare time during their day, which collectively could be used for doing some activity that helped them financially. With support from the CRPs, the SHGs created a business plan for setting up a spice processing unit, given its mass consumption across the villages, towns and city centres. The plan was presented to the VLIs, who approved of it. With support from ABF, the VLI provided the SHGs with the seed money of Rs. One lakh to undertake their operations.

The SHGs took the help of the village school principal, who provided them with technical information, and set up the unit to process turmeric, red chilli and coriander.



Standing Tall: SHG members of Chamunda SHG, Dhapada, Rajasthan
Source: NRMC

Understanding nuances of the business

The setting up costs of the machinery and the rented space was Rs. 35,000, another 55,000 were spent on procurement of raw materials and the rest on packaging material. They source their raw material from Bewar Mandi which is at close proximity from Kareda. The process of manufacturing involves cleaning, drying, pulverizing, sieving, packaging, transportation and marketing. The undertake production for seven to eight months in a year taking a break during the agricultural season. The peak season for their business is between April and June in their own village and during festivals and weddings within the village.

Reaping fruits of their labour

The SHG supply the processed materials to wholesale shops in nearby towns of Gyangar, Bhim, Bhilwara, and Ajmer. They supply to the local schools in nearby villages for preparation of mid-day meal. The SHGs also participate in direct sales through exhibitions and trade fairs held once or twice a year within the district. Until earlier this year, the SHG had earned Rs. 75,000 in profits after paying back one fourth of the loan to the VLI.

The women mentioned that they did face initial challenges of understanding the quantity of raw material to buy, the time period best suited for processing and identifying the shops that paid the best price for their product. They had to abandon some of their produce as it was spoilt during the rains. Moreover, they have realised that coriander does not reap them the best benefits and are planning to stop its processing.

Gaining Respect and Recognition

It is remarkable that the SHG has also won an award for their entrepreneurial venture in an event organised by Indian Institute of Bio-social Research and Development (IBRAD), Kolkata under their forum called *Sancalp.* The women were thrilled by the recognition and appreciated the efforts of the FES team for nominating them. *"The award instils pride in our work and we are grateful that our work is recognised even outside our own state. But the best part was that we were able to travel all the way to Kolkata. No other women in our village has done that. This, I think is the power of the SHG!"* said the SHG president as she narrated the event.

With their hard work and commitment, the women have set an example for the village regarding the power of an institution, irrespective of gender. Their work has helped then gain respect and engage in decision making in their households as well as their village. They now look forward to getting registered and developing a strong brand name so that could supply their order in bulk and under their own name.

The award for entrepreneurship under the *Sancalp* forum.
Source: NRMC

6.4. Beyond Securing Livelihoods: Creating a Social Capital

The OECD defines social capital as *"networks together with shared norms, values and understandings that facilitate co-operation within or among groups."* These networks can be understood as links between individuals or groups (family, peers or community- based groups). These norms and values can be viewed as the social and cultural protocols within a society that govern interactions among people and institutions. Essentially, social capital forms a bond that is capable of holding the society together through interpersonal and institutional relationships.

In this context, the project, through its process of bringing actors together to participate in the decision making process, has built social capital that expands the scope of sustainability of the project beyond securing livelihoods alone. The formation of social capital, in the current context, is of both the "bonding" type, which links people from similar social milieu, and the "bridging" type, which allows people from different social groups to connect.[18] By mobilising a large cadre of CRPs, creating a space for participation of community members from all castes, and ensuring women's engagement in the process, the project has thus built upon the strengths of the community to enhance this capital.

The project's focus is on providing an enabling environment to build the resilience of the households in securing and improving their livelihoods. Towards this, the project has facilitated the creation of a space for all the village members to participate in decision making for their common needs. This democratic process encourages the participation of women by design and allows weaker groups to voice their concerns through their representatives.

By training a cadre of resource persons, the project has built local capacities to develop and manage local resources and improve last mile service delivery. With inherent values of 'volunteerism' and 'social good', these CRPs are leading the way in establishing links with farmers, SHGs and the VLIs, improving the knowledge of farmers regarding best practices related to agriculture, supporting village institutions in taking informed decisions regarding commons and engaging with gram panchayat and government officials for better service delivery.

The project has created pathways to reach the households by supporting the formation and strengthening of SHGs which is an instrumental step in social and economic empowerment of women and their households. With increased awareness some of the SHGs have led by example and taken a more active role in decision making at the village level. Thus, the project is directed towards providing women with an empowering tool of participation to enhance their overall autonomy.

18Participatory Governance: An Overview of Issues and Evidence, Siddique R. Osmani, University of Ulster, UK, 2007 | Published under Participatory Governance and the Millennium Development Goals (MDGs), Based on Expert Group Meeting on Engaged Governance: Citizen Participation in the Implementation of the Developmental Goals including the Millennium Development Goals (MDGs)

CONSERVING NATURAL RESOURCES FOR IMPROVED ECOLOGY: ECOLOGICAL OUTCOMES

7. CONSERVING NATURAL RESOURCES FOR IMPROVED ECOLOGY: ECOLOGICAL OUTCOMES

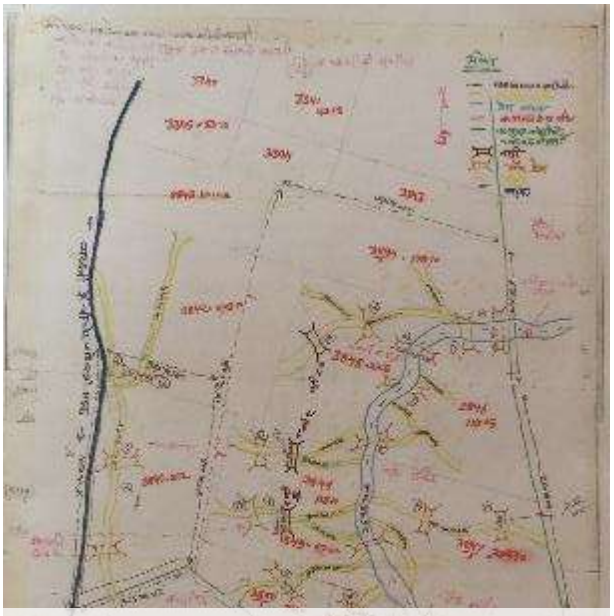
"Our forests not only support our livelihood but also bind our community together and preserve our culture. Whatever we have, we owe it to these forests, be it rains, food or protection."

-VLI member, Thana village, Bhilwara, Rajasthan

The high dependence of the local communities, especially the poor, on natural resources such as forest, grazing pastures and water bodies for their livelihoods, makes a strong case for protection of these resources from exploitation and degradation. The communities in the project areas in Rajasthan and Karnataka are dependent on agriculture and livestock for their primary income. These options, in turn, are intricately linked with natural resources especially in rain-fed areas which are prone to stress periods such as droughts. The dependence on common land and forests for ensuring soil and water conservation and for access to fodder, fuelwood, fruits, vegetables and medicines, builds the necessity for conservation of these resources to secure livelihoods. Thus, the project interventions focus specifically on protection and restoration of common property resources for improving livelihoods.

Eleanor Ostrom, the winner of the Nobel Prize in economics for her work on importance of commons and their management, highlighted a few principles for sustainable and equitable governance of common resources. These principles revolve around defining group boundaries; developing rules governing the use of common goods to local needs and conditions; participation of those affected in modification of these rules; designing a system for monitoring of the rules; and build responsibility for governing the common resource within communities from the lowest level to the entire interconnected system. These principles are reflected in the project approach to promote sustainable practices and equitable distribution of benefits among the communities, by driving collective action through the VLIs.

7.1. Activities Undertaken to Restore Common Property Resources



A village resource map to identify village boundaries and plan for protection of common areas
Source: NRMC

The villages in the project areas have faced degradation of their common land due to over grazing of pastures and mining of boulders that is prevalent in both states. Sand mining is also rampant in Chikballapur, Karnataka which fuels an enormous demand from the construction sector. Due to these activities, the soil in the upper catchments was unable to hold the moisture and in turn led to poor recharge of water bodies in lower catchments, in these rainfed areas. With poor governance of natural resources, availability of fuel wood and fodder in the project areas was declining due to unregulated consumption. In this context, FES has worked with the villages to form and strengthen VLIs for better management and governance of natural resources.

Through discussions supported by FES, the VLIs have taken steps towards protection of grazing pastures and forests through various measures. With preparation of the perspective plans, the VLIs have leveraged MGNREGA funds for fencing the grazing lands and construct water harvesting structures such as anicuts, contour bunds and check dams for increasing ground water recharge. As per the monitoring reports shared by FES, close to 4341 acres of common land has been treated using the MGNREGA funds as against the target of 3300 acres. By leveraging the scheme, 162 water harvesting structures (village tanks, farm ponds, cattle ponds and anicuts) have been constructed or renovated until the end of 2016. However, this number falls short of the target of 500 such structures envisaged by end of 2016. The primary reason for the same is the priority given by the district administration to individual works under MGNREGA in most of the project blocks. This has resulted in less number of works being approved under MGNREGA which contribute to the limited progress. Some of the structures are also under construction and will be only be reported after completion.

To promote the consideration of common land for works under the scheme, FES has adopted advocacy measures for with the Government of Rajasthan. With continued efforts, FES has been successful in persuading the Government of Rajasthan to issue Government Orders for organising Gram Sabha in Gram Panchayat on 2nd October 2016, with focus on protection and development of commons by forming village level pasture land management committees and mapping of commons and its development by using MGNREGA funds.

Table 7: List of trees promoted by CRPs for plantation in Bhilwara

Local Name	Scientific Name	Purpose
Babul	*Acacia nilotica*	Fodder for goats (seeds) which results in increase in milk and health
Karanj	*Pongamia pinnata*	Useful for shed and shelter for animals
Sesame	*Dalbergia sissoo*	Shade for animals
Tamarind	*Tamarindus indica*	Food for both animals and humans
Neem	*Azadirachta indica*	Green fodder for animals and dry branches for fuelwood
Sankar kechdi	*Acacia leucophloea*	Feed for animals
Angraji babool	*Prosopis juliflora*	Livestock feed

The VLIs have established by-laws or rules and regulations for the management of common areas which evolve over a period of time. The by-laws are related to limiting grazing in one pasture for a defined period to allow it to regenerate for use in another season. Further, the rules cater to collection of fuelwood, extraction of NTFP like seeds, leaves, fruits, broom sticks and build in fire protection mechanisms. Plantation of perennial fodder crops has been undertaken in many villages for supplementing fodder requirements of the village. Moreover, the CRPs have promoted plantation of certain trees that provide fodder for the livestock.

7.2. Outcomes of Conservation Measures

The returns of protection and conservation measures are seen through increased availability of biomass[19], improved soil moisture regimes and where the geohydrology supports recharge, increase in ground water table, which would impact area under cropping. While some of these impacts are direct in nature (increase in biomass specifically related to fodder and fuelwood), other impacts such as improvements in the ecosystems (pollination processes and watershed outcomes) are observed over a longer period. Other indirect impacts include reduction in transaction costs for women in access to common resources and increased resilience of communities in stress periods such as droughts.

The VLIs, SHGs and farmers in both states collectively pointed out the increase in availability of fuelwood and fodder from the common land over the last three years. In Rajasthan, the discussions with the women SHGs revealed that even though last year has been a drought year, they have enough fodder from the common land for their livestock to graze. The women pointed out that though there has been negligible cultivation during the *rabi* period last year, due to poor rainfall, their livestock have sustained because of protection and restoration of their common lands. Thus, through project activities, the resilience of the households to cope with drought periods has been built over the years.

Table 8: Proportion of households reported using grazing land for feed (in percentage)

Households using grazing land for feed	Rajasthan		Karnataka		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
A small amount	5.8	2.4	11.2	3.3	8.9	2.8
Some	7.0	19.6	12.0	20.3	9.9	19.9
Most	4.6	73.2	1.0	58.2	2.5	66.0
All	71.9	4.8	41.0	18.3	54.1	11.2

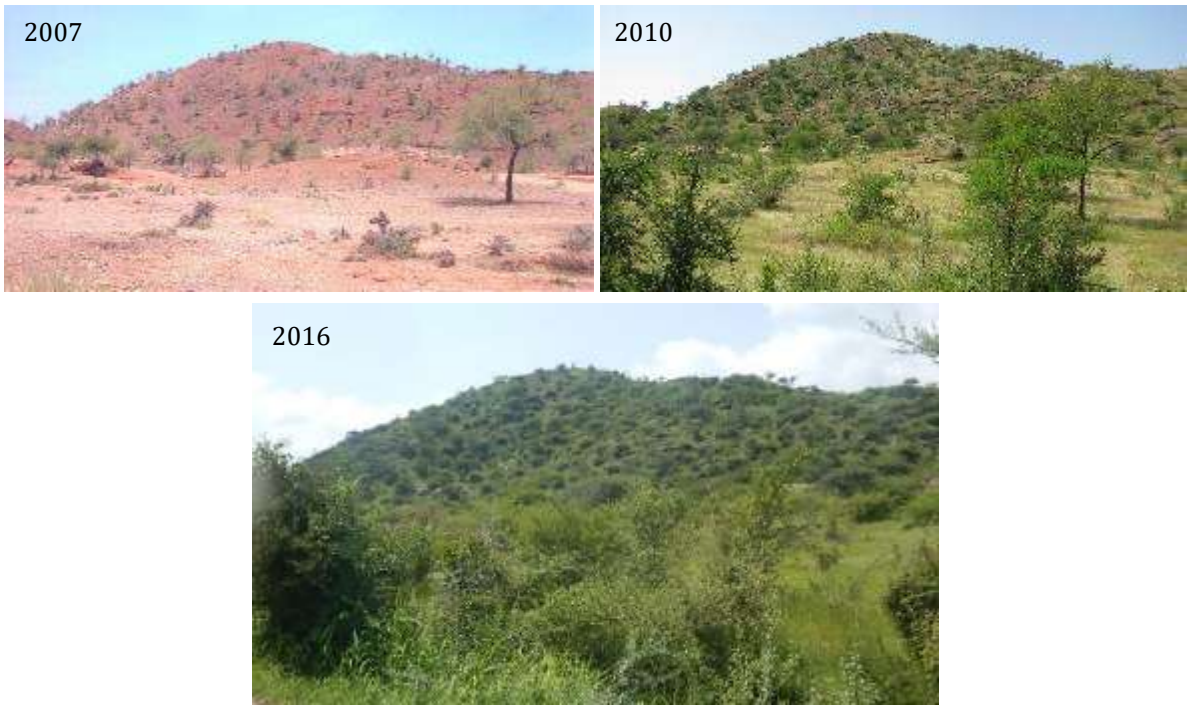
However, in Karnataka, the effects of the drought are quite stark with very low ground water levels due to extensive use of underground aquifers over the last two decades in these areas. Even though the villages have undertaken restoration measures, the poor rainfall has resulted in reduced fodder availability, leading to increased costs of livestock maintenance. Moreover, dried up ponds are a common site in the project areas in Karnataka, due to poor rainfall. The data from the primary survey in Table 8 indicates the effects of drought which has affected the availability of fodder for grazing from common areas in the last one year, in Karnataka.

Poor rainfall has led to drying up of ponds in several villages of Chikballapur, Karnataka
Source: NRMC

[19] Biomass in the current context refers to the total amount of plant mass which includes food, timber, and fodder and feed for livestock.

One of the measures of detecting improvement in biomass of common lands is through observation of photographs of these areas taken over a period of time. The pictures below highlight the status of one particular area of common land in Thana village of Bhilwara, Rajasthan, indicating the improvement, which is a result of the concerted efforts of the villagers to protect their common land. A case study on the village's progress in restoring their common land provides details of the activities and the outcomes.

Figure 8: Pictorial depiction of common land of Thana village, Bhilwara district in Rajasthan in 2007, in 2010 and in 2016



Protecting Commons for Enhanced Ecological Services: A Case Study

The villagers from Thana village were facing extensive degradation of their commons due to extensive and unregulated grazing not just from their own village, but other villages too. Illegal encroachment from neighbouring villages had led to reduced fodder for their own livestock. After much deliberation, the villagers, with support from FES formed their own committee to protect and monitor their forest and grazing areas.

Creation of rules and regulations to restore common land

The Charagah Vika Samiti of Thana, through trainings enhanced their knowledge regarding management and development of commons. They created their by-laws for protecting them from limitless grazing and deforestation.

Some of their by-laws include:

- If the VLI executive committee members work under MGNREGA for 8 days, then one day will be contributed towards developing the CPR.
- Preference will be given to women of any caste to be appointed as mates for any MGNREGA work site.
- The villagers are not allowed to wash clothes from the water bodies which are meant for drinking purposes of animals. A fine of Rs.51 will be levied as a penalty for not following the rule.
- There are incentives for reporting about illegal cutting of fodder and penalty for those who cut it. A villager was fined Rs. 50 for cutting the branches in the protected land.

While the by-laws worked for their own village, they needed to take measures to protect their forests from degradation by other villages. Thus, they decided to appoint one villager as security guard to patrol the area and curb illegal encroachments. The neighbouring villages, realising the power of the collective action of the VLI, stopped using the common areas of Thana village.

Use of Government schemes to undertake watershed activities

The committee has also created its perspective plans for leverage of funds from MGNREGA towards building water harvesting structures such as anicuts, contour trench and check dams in strategic areas of the common land to improve rain water harvesting. Through their efforts, they have been able to protect close to 95 acres of land which takes care of the fodder needs of the village for nine months.

Augmenting income through increased biomass

The VLI shared their own calculation of annual savings through their efforts. Their village consisted of 200 households which reared a total of approximately 400 goats. Every goat had a daily consumption of close to 5 kg of fodder. The cost of fodder in the market is Rs. 5 per kg. This effectively meant that a total of Rs. 27,00,000 were being saved by the entire village every year. This translated to every household saving, on an average, Rs. 13,500 per year.

Improvements in the ecosystem services

The VLI reported that increased availability of fodder over the last ten years and resultant savings has led to an increase in the number of goats reared by the households, resulting in further increase in income. The VLI also highlighted the effectiveness of the water harvesting structures in improving soil moisture content due to which the ground water level has increased over the last six to seven years. Now, the farmers in the village have reportedly brought more land under cultivation in the last 7 years and have experienced an increase in their yield.

Reduction in transaction costs

The women in the village have been able to save labour and time in collecting the fodder for their livestock. Earlier, the women had to visit two separate patches of grazing land to collect fodder for their animals and to obtain adequate amount of fuelwood. In addition, they had to fetch water for their animals for drinking and washing purposes. These activities took 4-5 hours of their time every day. With restoration of the grazing land and construction of cattle ponds the women are able to collect the fodder from within one grazing land and send their animals to the cattle pond. These efforts have reduced the drudgery for women who now save 2-3 hours every day which they can now use for rest or wage labour. Considering a minimum wage of Rs. 130 for 8 hours of work under MGNREGA, an effort of two hours over a month is worth Rs. 975 (approximately) and close to Rs. 12,000 for a year. Moreover, rest also translates into healthy outcomes for the individual as well as a household through improved productivity.

With such direct and indirect benefits of protection of common property resources, the VLIs see merit in developing the remaining 60 acres of revenue wasteland to partial land for common good.

Decrease in transaction costs for women
Source: NRMC

Improved soil moisture conservation resulting in increased yield of crops
Source: NRMC

Opportunity to increase livestock numbers
Source: NRMC

Availability of cattle ponds through creation of natural infrastructure under MGNREGA
Source: NRMC

Observation from control villages highlights the absence of such institutions which bring together the entire village on a common platform for collective action. With no collective action, the common land in neighbouring villages has not received any concerted restoration measure. With threats of boulder and sand mining, these areas continue to face the risks of degradation.

Notably, FES has taken steps towards monitoring of the biomass in some of the project as well as control areas to identify the impact of the regeneration efforts. Through remote sensing data and subsequent ground truthing, phytomass (plant mass) estimation processes and household surveys to estimate demand, FES has developed monitoring frameworks to impute the monetary value of biomass generated.

Based on available data on the biomass assessment of fodder production across the years 2015 and 2016, it was observed that the total dry weight of fodder is significantly higher in project areas compared to control areas, indicating the efforts of the project in regeneration of natural capital.

Table 9: Comparison of Dry Fodder Productivity in Project and Control Areas (2015 and 2016)

Area	Total Protected area for fodder production (in Ha)	Dry Fodder production (Protected area; in tonnes)	Dry Fodder production (Control area; in tonnes)	Total change in biomass of 1 year as compare with control
Rajasthan	2212	2608	1330	1278
Karnataka	1017.25	1029	699	330

Considering an average market price of dry fodder to be Rs.3 per Kg and multiplying the production of dry fodder with the price, the total revenue generated shown in table 10. It must be noted that the biomass assessment caters to 49 habitations in Mandal and Mandalgarh blocks of Bhilwara, Rajasthan and to 38 habitations in Bagepalli block of Chikballapur, Karnataka.

Table 10: An estimation of revenue generated for the project and control areas.

State	Revenue in project areas	Revenue in control areas
Rajasthan	78.2 Lakhs	39.8 Lakhs
Karnataka	30.8 Lakhs	20.9 Lakhs

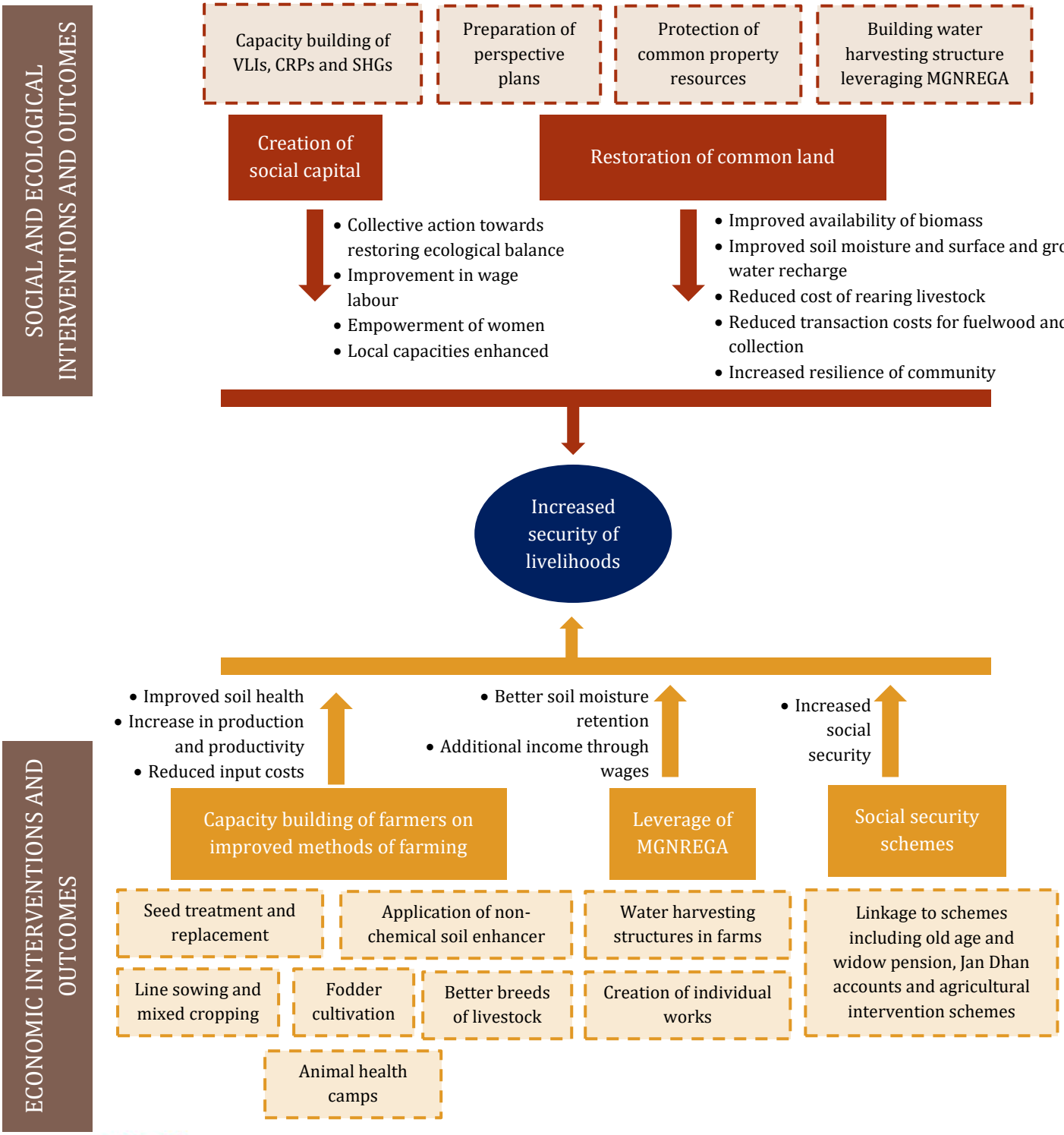
It can be observed that the estimated revenue generated from the dry fodder production in the project areas of Rajasthan is almost twice that of in the control areas of the same state. In Karnataka, the estimated revenue is almost 50 percent higher than that in control areas. This assessment, thus provides a monetary estimate of the returns of the investments undergone in the project on protection of common land. However, in absence of the amount of investment on the interventions related to protection of commons or the availability of the number of households accessing these common lands, further analysis of efficacy is beyond the scope of the mid-term assessment.

SECURING LIVELIHOODS THROUGH IMPROVED ECO-SYSTEM: ECONOMIC OUTCOMES

8. SECURING LIVELIHOODS THROUGH IMPROVED ECO-SYSTEM: ECONOMIC OUTCOMES

The interventions undertaken under the project has affected livelihoods of the households through direct and indirect contributions. While interventions related to ecological and social dimensions have resulted in improved ecosystem services, direct interventions such as training of farmers on improved agricultural practices, leverage of MGNREGA to improve water harvesting capacities and building access to social security schemes, has led to increased security of the livelihoods in the project areas. The figure below summarises the impact on livelihoods through the interventions.

Figure 9: Summary of impact of the interventions on securing livelihoods



8.1. Examining change in income of households

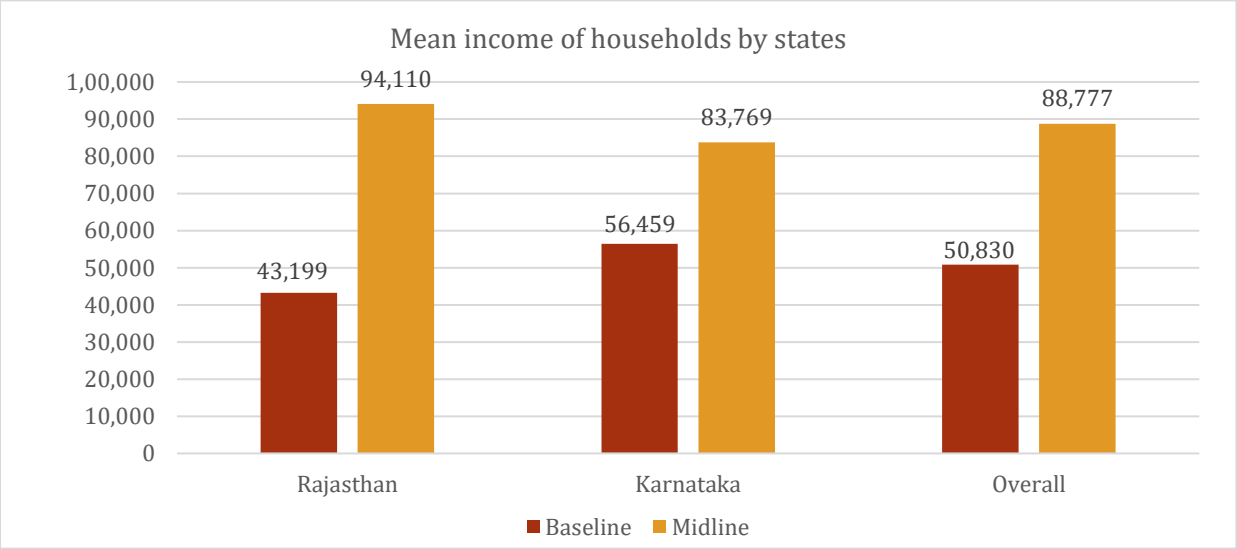
The findings from the mid-term survey reveal an increase in net income[20] of the sample households across the two states. Table 11 highlights the change in proportion of households by income categories. It is observed that households in the income range of less than Rs. 36,000 have reduced and those in income range of Rs. 36,000 and above have increased. This indicates a shift in the proportion of households into higher income ranges.

Table 11: Percentage distribution of households by income categories

Income Categories	Rajasthan		Karnataka		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Upto to Rs. 12000	23.6	12.8	18.7	8.5	20.8	10.6
Rs. 12001 to 36000	41.8	23.5	31.1	22.5	35.6	23.0
Rs. 36001 to Rs. 60000	15.9	18.4	19.7	20.5	18.0	19.4
Rs. 60001 to Rs. 84000	8.7	13.8	11.0	21.5	10.0	17.7
Rs. 84001 to Rs. 100000	2.7	6.6	4.5	7.5	3.7	7.1
More than Rs. 100000	7.3	25.0	15.0	19.5	11.7	22.2

Further, the mean income of households has increased significantly when compared to the baseline average income as shown in Figure 10. However, it must be added here that *change in average net-income is not the best measure to assess the change in annual income given that mean requires actual number of households for calculation.* Given that the baseline and midline sample numbers differ widely, a further comparison of the mean incomes by income categories is not provided as it does not present an accurate picture of the change in incomes. Thus, it is *strongly recommended that the change in proportion of households in the income categories, presented in table 11, be considered as it is a better measure of tracking the change in income levels.*

Figure 10: Mean income of households



[20] Net income is defined as per the calculations of the baseline study. Net income= Income from all sources of the household (cultivation, livestock, wage labour, non-agricultural business, pension, salaries and remittances) – [expenditure on livestock (fodder, veterinary charges, labour) + expenditure on cultivation (seeds, fertilisers, labour, machinery)+ expenses on non-agricultural business]

It must be noted that the average mean income of the households in different income categories as per the present assessment (refer annexure table 1) aligns with that data of the mid-term assessment conducted by FES (refer annexure table 2). However, due to difference in methodologies followed, further comparison of data of the two assessments is not possible at this stage.

Another effective measure of assessing change in income is to understand the *mean income of households by ownership of land* which is a critical element of understanding whether the increase in income is equitable in nature. Towards this, the assessment has analysed the mean income from different sources (which the project interventions were likely to impact) to understand the change observed. A limitation to this analysis is the absence of baseline data on income from cultivation alone. Due to this, the comparison of increase in income from cultivation is not available. Table 12 highlights the mean income of households from different source by ownership of agricultural land.

Table 12: Mean income from various sources by ownership of agricultural land

Land holding size	Income from MGNREGA wages		Income from agricultural labour and wage labour)		Income from livestock		Income from non-agriculture business	
	Baseline	Midline	Baseline	Midline	Baseline	Midline	Baseline	Midline
<1 acre	3047.9	5182.3	11102.4	31888.1	3042.4	6214.4	2632.5	2202.0
1-3 acre	4587.8	5311.4	8590.5	21631.5	4627.3	9932.5	2247.4	2080.0
3-5 acre	2976.2	4600.9	10965.0	10059.8	12204.2	15452.5	4587.8	685.0
5-10 acre	3135.2	7403.3	15772.6	5560.0	15686.6	37733.3	3805.2	-

8.1.1. Augmenting income through wage labour under MGNREGA

The table above shows that the mean income from MGNREGA has increased across all categories highlighting the success of the project interventions. The efforts of VLIs and CRPs in creation of perspective plans and coordinating with the Gram Panchayat in approval of these has generated more work and more wages in both states in comparison to the baseline. Under MGNREGA many farmers have undertaken soil and water conservation works in their farmlands. Farm bunds, gully plugs and farm ponds have been made to aid in soil conservation. Treatment of drainage line and construction of water harvesting structures in common land leveraging MGNREGA funds has also benefitted the households. In Karnataka, farmers reported that application of tank silt into the fields was an annual ritual which was observed by most of the farmers but now it is not a widely followed practice. However, with influence from the project staff and the CRPs, this practice is slowly being revived through works under MGNREGA. Even so, the farmers, VLI members and SHGs of both states were of the opinion that MGNREGA still has many issues due to which they are not able to utilise its full potential.

Limitations faced by the households in access to MGNREGA: Voices from the Field

Structural issues with respect to implementation of MGNREGA create limitations in realising the full potential of the scheme. Significant delays in wage payments under MGNREGA has been cited as a major constraint faced by the villagers. In Chikballapur, Karnataka, women from some of the SHGs highlighted the delay in payments that happen in MGNREGA work, where they receive their payment often after two to three months of work. Considering that the households need to pay off their loans and also ensure food security for their families they require a regular flow of money within a stipulated time. Therefore, they do not find MGNREGA as a viable option even though it may pay them a higher wage.

"NREGA work does pay more than what other works in the village gives. But of what use it is, if it is disbursed after couple of months after completion of works? If we go for other works then we are paid on the very same day or at least by the end of the week with which we can make our payments".

-SHG member, Neralamaradhalli village, Siddlaghatta, Chikballapur, Karnataka

Women prefer working in emerging town centres near their villages, which undergo a lot of construction, and receiving a daily wage at the end of the day which makes them feel secure, even if it is less than that received under MGNREGA. Some of the participants of the VLIs also suggested that with the project blocks being very close to Bengaluru and Tumkur, short term migration is common for the men in the households.

Further, the participants of FGD in both, Rajasthan and Karnataka, highlighted that if a farmer from neighbouring village required some labour work related to creating natural infrastructure in his/her field, he/she would ensure that a transportation to his field, which may be 3-5 kilometres away, is arranged. The security of one meal and guaranteed daily wage at the end of the work, attracts the labour. However, under MGNREGA, women often have to cover large distances on foot without a security of payment at the end of the day.

Other issues include delay in preparation of estimates and sanction of works, monitoring while the work is going on as also the kind of work which is taken up (work requiring more labour inputs versus materials). Though additional manpower (engineers and barefoot technicians) have been recruited for group of *gram panchayats* it will take some more time before the work flow gets streamlined. It was understood through interactions with the VLIs that due to structural delays in the approval of estimates at the gram panchayat and taluk level, the shelf of work starts to come in only by May and June. This is also the agricultural period when farmers start their sowing, thus during this season, people either work on their own farms or work as agricultural labour due to high demand. The MGNREGA work thus gains momentum in the period only between December and February.

The situation thus, creates an opportunity for the project to strengthen VLIs and the *gram sabhas* to interact with the Gram Panchayats and create collective pressure on them to ensure that the shelf of work is created in time and, the payments for the work are made on a regular basis.

8.1.2. Adoption of improved farming practices leading to reduction in input costs

Table 13: Mean income and expenditure on cultivation (in Rs.)

Project Area	Mean income from cultivation	Cost per acre
Project	41525	5486.0
Control	59437	9444.5

In absence of income from cultivation from the baseline data, the income and expenditure from control areas has been used as a comparison to draw the inferences regarding the economic benefits derived through cultivation. It was observed that the mean gross income from cultivation in project villages is seemingly lower that control areas. However, the cost per acre of cultivation in control areas is significantly higher than that in project villages. Discussions with the farmers in the control villages revealed their excessive dependence on bore-well for irrigation due to continued depletion of ground water. Moreover, poor knowledge regarding practices such as line sowing or use of better quality of seeds, has led to higher input costs for them.

This highlights the efforts of the intervention in increasing the knowledge of the farmers regarding better agricultural practices that reduce the input costs. Moreover, with continued interaction of the CRPs with farmers, the project has been able to shift the attitude of the farmers into adopting new practices that have led to higher productivity. The farmers are now aware of certified seed distribution centres and approach them for high quality and fair price of the seeds. Qualitative interviews with the farmers revealed that in the last couple of years the CRPs have become a source of information on many aspects and have provided trainings to the farmers with respect to sustainable agricultural practices. One of the farmers in Bagepalli, Karnataka mentioned, *"These had been practiced by our forefathers and somehow we had lost track of it. It's good to be following these practices (mixed cropping, crop rotation, using of manure, and integrated pest management) again though there are some constraints like erratic rainfall and labour intensive practices among others."*

Interventions undertaken to improve agricultural practices

- Seed replacement
- Seed Treatment
- Line Sowing
- Application of Non Chemical Pesticide (Chilli Garlic extract, Neem Cow Urine mixture. Mixed leaf extract)
- Application of Non Chemical Soil Enricher (Jeevamrut, Amrutpani)
- Application of Farm Yard Manure
- Agriculture training on sustainable practices
- Fodder cultivation
- Vegetable cultivation
- Irrigation Scheduling
- Horticulture (direct or through linkage)

The farmers also highlighted the main challenges faced by them in practicing agriculture for which they still seek support from the project. Some of these challenges are highlighted below:

a. Erratic rainfall in these rainfed regions affects their crop yields and productivity. Farmers in Karnataka blamed the delay in rains this year due to which they had to do the seeding of the groundnut crop twice because the moisture in the soil was not enough when the seeds were sown initially. The farmers wanted information regarding weather patterns in a timely manner so that they can plan their crops better.
b. Depletion of ground water in Karnataka was a critical issue felt across the villages due to extensive water mining through bore-well irrigation. The yield of water from the bore wells is also reducing due to poor rainfall in the last two years.
c. Crop insurance has been adopted by a few farmers in both states with varied reaction to its benefit. The farmers felt that there was no guarantee that they would be compensated

adequately or in time in case of crop failure due to drought. There have been many examples in the area where the rates for crop damage had been fixed arbitrarily by the authorities without them visiting the farms of the applicants. A farmer from Bachanahalli village in Karnataka said, "Another farmer and I had insured our crops for 2 acres and 5 acres respectively. Because of the drought the crop failed and we received the insurance amount. I had received half the amount of the other farmer who had grown the same crop in an area much lesser than mine. I don't know on what basis the officials make the calculations."

d. Absence of grain banks in the village means that the farmers have to make their own arrangements to store the grains, which adds to their cost.
e. Farmers in both Karnataka and Rajasthan felt the need for a farmer producer company for protection of their rights and receipt of fair price for their produce. Almost all the farmers said that the intermediaries who bought their produce would decide the prices which the farmers had to accept in absence of better options of market access.
f. Availability of credit from institutional sources is limited and many small farmers still depend on money lender for loans. Compared to the money lenders the credit availed from institutional sources are cheaper but they are not very easily given and require documentation. Moreover, most of the villages don't have a bank within the village and people have to usually travel to the Panchayat headquarters or the nearest town to access the services of a bank.

Produce by the farmers is usually sold at the farm itself particularly in the case of crops like vegetables and maize since their shelf life is shorter. Intermediaries come to the farm and quote a rate for the entire crop which is followed by a negotiation based upon which the final rates are fixed. APMCs yards are also another place where farmers take their produce to sell, but the cost of transportation and its timely arrangement discourages small farmers from using this option. There is no certainty about prices with respect to vegetables, such as tomato particularly. If a farmer can get three to four crops of it, there is some chance that in one of the sales, the prices would be quite rewarding. But many times farmers do not find it worth in harvesting the crop from the field. Moreover, price fluctuation put them at the mercy of the intermediaries because vegetables are a fast perishing produce and absence of cold storage facilities nearby does not help their case.

Improved access to market and credit linkages are key interventions under the project. Given the challenges faced by the farmers, these activities would require a renewed and focussed approach with engagement of the VLIs and the CRPs such that farmers are able to get a fair price for their produce.

8.1.3. Better livestock management reaping benefits for farmers

The project interventions have helped the households in livestock management through promotion of better breeds of cattle and small ruminants. Through SHG's, households have been provided with goats of *Sirohi* breed which provides better sale value to the households. Animal health camps organised by FES have been praised by all the villagers in Rajasthan and Karnataka alike as they have helped the farmers in vaccination of their animals and receipt of technical information regarding care of the livestock. The project has also promoted better fodder seeds for cultivation in private farms which have led to good yield and better quality of fodder for the animals. Increase in availability of fodder through common land and construction of cattle ponds has also reduced the input costs for the poorer households.

As reflected in table 12, the mean income from livestock has increased across all household categories, specifically among small and marginal farmers. In Karnataka however, farmers had

witnessed a decreased crop production in 2016 due to the drought. Decline in crop production led to limited fodder from crop residue. Discussions with farmers and SHGs revealed that during this drought, the common land helped the households in absorbing the shock and reduced the distress sale of the livestock to some extent. These outcomes reveal the efforts of the project interventions in increasing the resilience of the villages in drought periods.

A farmer in Bagepalli, Karnataka who grows fodder crop of high yielding variety to meet his fodder needs
Source: NRMC

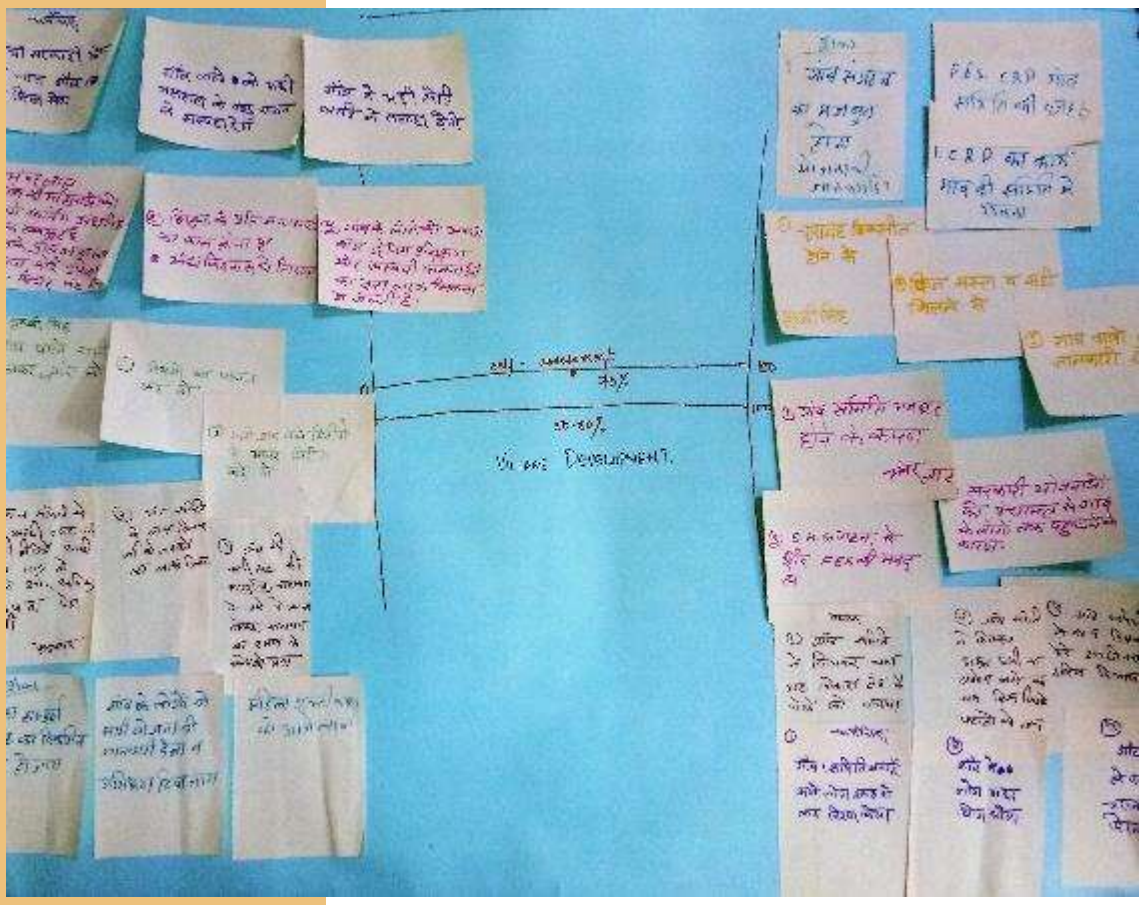
8.1.4. Non-farm activities and leverage of social security schemes

It has been observed that the income from non-farm activities have not changed since the baseline. Less than 1 percent of the households reported to be engaged in non-farm business for livelihood. The SHGs did however show an intent to engage in non-farm activities such as papad making, incense sticks and paper plate making for which they do want training and seed money.

The project has engaged extensively in linking households with social security schemes leveraging a fund of approximately Rs. 145 lakhs until the end of 2016 exceeding the target of 124 lakhs. Over 2100 households have benefitted from non-farm livelihood and social security schemes as against the target of 2800 households. The quarterly reports from FES highlight procedural issues in documentation leading to delay in access to the schemes. However, due to absence of baseline data of access to various social security schemes, the mid-term data provides no comparison.

An overall increase in the net income from baseline across all income groups, an increase in the mean income of the population and a reduction in the average cost of cultivation, highlights the contribution of the project in improving the economic situation of the households and securing their livelihoods by building resilience to absorb climate shocks such as droughts.

KEY FINDINGS OF THE ASSESSMENT: A SUMMARY



9. KEY FINDINGS OF THE ASSESSMENT: A SUMMARY

In its objective towards improving and securing the livelihoods of the rural poor, the project interventions have placed equal weightage on society, ecology and economy and help in optimization of natural resources and governance leading to enhanced ecosystem resilience. Central to the approach is collective action through revival and capacity building of community based institutions such as VLI for improved local governance of natural resources. The approach promotes assistance to communities to determine and adopt consumption levels that are within the ecological capacity of the area through facilitating collective action of local communities towards conservation of natural resources.

A. SOCIAL OUTCOMES

The project interventions, by design, foster community participation as collective action forms one of the key pillars of the socio-ecological approach. Recognising the critical importance of people's participation for success of livelihood initiative centred on natural resource management, the project is directed towards facilitating equity and inclusion in its processes. This has been undertaken by creating a platform for all the village members to participate in decision making for their common needs through the VLIs. This democratic process encourages the participation of women by design and allows weaker groups to voice their concerns through their representatives. The VLIs through collective action have engaged in planning, execution and monitoring of various activities under conservation and regeneration of common property resources, leveraging funds under social security schemes for construction of natural infrastructure for soil and water conservation, and, supporting individual households by promoting income generating activities through SHGs.

The project model has mobilised a cadre of local resource persons through capacity building of CRPs who support the village in managing their local resources and sustaining their livelihoods through improved service delivery. The CRPs play a pivotal role in supporting the VLIs in gaining skills and knowledge to fill the information gaps at village habitation level, mobilising local communities for collective action and enabling improved leverage and implementation of government schemes. The CRPs act as a central point of communication with the VLIs, the SHGs and the individual households. They are trusted resource persons who are improving the knowledge of farmers regarding best practices related to agriculture, supporting village institutions in taking informed decisions regarding commons and engaging with gram panchayat and government officials for better service delivery. They support the SHGs by building their capacities to manage the group savings and engage in economic activities. Further, they provide assistance to the individual households in accessing social security schemes and bringing their issues to the VLI platform. In turn, the CRPs have gained the trust and respect of the communities who look up to them for solving their problems.

The SHG platform is directed towards providing women with an empowering tool of participation to enhance their overall autonomy. By virtue of their savings, and support from the group, the women are now able to take care of certain household needs which earlier was not possible. The platform provides them a space to voice their individual concerns and discuss their agenda and issues in the VLI meetings as a collective. Over the last two years, women have increased their savings and are thus able to support their household needs, which has also increased their negotiating power within the households.

Thus, by mobilising a large cadre of CRPs, creating a space for participation of community members from all castes, and ensuring women's engagement in the process, the project has built upon the strengths of the community to enhance this capital.

B. ECOLOGICAL OUTCOMES

With the efforts of the project geared towards the protection and conservation of the commons, the outcomes of the activities are seen through increased availability of biomass, improved soil moisture regimes and increase in ground water table as reported by VLIs, SHGs and farmer groups. Other improvements in the ecosystem include reduction in transaction costs for women in access to common resources and increased resilience of communities in stress periods such as droughts. The increase in availability of fodder and fuel wood as reported by the communities, is supported by evidence from the biomass assessment undertaken by FES. The assessment reveals significant increase in biomass in the last one year in project areas as compared to control areas.

C. ECONOMIC OUTCOMES

Both, the improvement in ecosystem services and the effectiveness of direct interventions such as training of farmers on improved agricultural practices, leverage of MGNREGA to improve water harvesting capacities and building access to social security schemes, has led to an increased security of the livelihoods in the project areas.

Improvements in ecosystem services such as availability of ground and surface water, better soil-moisture regimes and enhanced availability of bio-mass (fodder and fuelwood) has led to reduction in input costs for the farmers and transaction costs for women. The direct interventions have led to an increase in net income of the sample households across the two states indicated by a shift in the proportion of households into higher income ranges.

Moreover, mean income of households from sources including MGNREGA, livestock and agricultural wage labour has also increased from the baseline. The cost of cultivation per acre was significantly lower in project areas as compared to control areas. This highlights the efforts of the intervention in increasing the knowledge of the farmers regarding better agricultural practices that reduce the input costs. Adoption of improved breeds of cattle and small ruminants, use of enhanced fodder seeds and increased knowledge of vaccination of the animals has led to an increase in mean income from livestock as compared to the baseline.

With the help of the project interventions, the wages received under MGNREGA has shown improvement, even though a lot remains to be addressed under the scheme. Very few households engaged in non-farm business activities resulting in no change in the earnings from such activities.

D. CHALLENGES IN SUSTAINING THE MOMENTUM OF THE INTERVENTIONS

The evidence from the assessment brings to the fore certain key challenges in implementation of the project with respect to the nature of interventions and the process adopted during implementation. Some of the emerging challenges include:

- Structural issues in implementation of MGNREGA lead to limited utilisation of the schemes by the households;
- Need for building further synergy between VLIs and Gram Panchayats for better service delivery and resolution of conflicts between villages;

- The responsibilities of CRPs needs to be redistributed to avoid concentration of workload on one individual. Due to the extent of the workload and the nature of work itself, most women are unable to perform all the roles efficiently as they have to take care of their households as well.
- More attention is required to foster an active participation of women in the VLI meetings to ensure better integration of women's thoughts and opinions into the decision making process.
- Limited access to markets, credits and price information, reduces the chances of the farmers in getting a fair price for their crops. The farmers are largely dependent upon the middlemen to fix the price of their produce, reducing their profits.
- The loans for purchase of sheep and goats provided by the VLIs to the poorest women in the SHG do not have a fixed time of return as investments such as goats and sheep require one to two years to pay off any substantial returns. Thus, similar loans to other members from the revolving fund require a time period of more than a year, which sometimes leads to discontent within the SHGs.

A more detailed analysis of each of the above challenges is provided in the ensuing sections.

CONCLUSION AND THE WAY FORWARD

10. CONCLUSION AND THE WAY FORWARD

The conclusion to the report first addresses the relevance, effectiveness, efficiency and the sustainability of the project. It further delves into the challenges in continuing the momentum of the interventions providing a way forward with plausible action oriented recommendations.

10.1. Relevance of the Project Interventions

The findings of the assessment reveal that the project interventions have demonstrated its relevance in promoting a socio-ecological approach to livelihoods in light of the socio-economic and ecological context of the project areas. With degradation of common lands, reduced pastures for grazing, depletion of ground water, negligible efforts towards water harvesting and unsustainable agronomical practices, the livelihoods of the rural communities were adversely affected. The socio-ecological approach has established its relevance in this context by securing livelihoods that are dependent on natural resources through ecological restoration of commons, augmentation of water resources and building resilience of farming systems through creation of natural infrastructure.

By laying equal stress on society and ecology as on economic outcomes, the approach has supported the revival and strengthening of community based institutions for improved local governance of natural resources. In turn, these institutions have formed the basis for fostering collective action that has led to protection and restoration of common property resources leading to improved biomass content; improvement in ecosystem services leading to better soil-moisture conservation and increase in ground water levels; enhanced leverage of social security schemes for securing livelihoods; and promoting non-farm enterprises for women to expand their economic opportunities and strengthen their autonomy. Through sustaining a cadre of local resources persons, the project has developed community leadership that has been a key enabler in engendering participatory governance of natural resources.

10.2. Effectiveness of the Project in Creating Pathways to Secure Livelihoods

The evidence from the assessment highlights the effectiveness of the efforts of these community based institutions in augmenting the income of the households by direct and indirect interventions. With support from the CRPs the VLIs have been able to create perspective plans to protect their common land and leverage MGNREGA to create natural infrastructure in the villages for soil and water conservation. Moreover, the CRPs engage with the Gram Panchayats to facilitate the process of approval of the shelf of works and payment of MGNREGA wages in a timely manner. The CRPs help build the capacities of the SHGs towards their better functioning and support in undertaking livelihood related activities. Further, this cadre supports the individual households by linking them with social security schemes and enhancing farmer's capacities through training on improved agronomical practices. With such collective efforts, the evidence reveals an increase in overall income of the sample households along with an increase in the mean income of the households. This increase is also equitable in nature with small holders also witnessing an increase in mean income from wage labour, livestock and cultivation. Thus, the project through ecological and social measures is contributing towards securing the livelihoods of the project households.

10.3. Allocative Efficiency of the Project

By creating a social capital, the project has demonstrated allocative efficiency of resources and enhanced the scope of its outcomes beyond securing livelihoods. By leveraging the services of VLIs, SHGs and CRPs the project has included a variety of stakeholders into implementation that strengthens the equity and inclusion component of the interventions. Most financing was required for capacity building of the institutions. Positioning of the CRPs also incurred budget costs, primarily for their honorariums through the VLIs. Examining possible alternatives for financial design, the major possible change is seen in instituting a cadre of female resource persons at the village level to support the CRPs for village level work. With a monthly remuneration, this cadre of resource persons will not only enhance the outcomes of the efforts of the CRPs, but also strengthen the economic and social status of these women.

However, this assessment cannot comment on the technical efficiency of the project (vis-à-vis the benefits generated through the project in light of the costs incurred) as this estimation is not a part of the scope of this assessment and data towards such estimation has not been collected. This provides an opportunity for the end-term assessment to examine the technical efficiency of the project through streamlining data on project expenditure and services generated through the same.

10.4. Sustainability of the Project Outcomes

Central to the project's approach is initiating collective action from local communities that bodes well for the sustainability of the project outcomes beyond the project period. The VLIs are the umbrella institution that provide a forum for participation of members from all communities and serve as a platform for service delivery. The issues undertaken by the VLIs are that of common needs that concern the entire village avoiding elite capture of the forum. Moreover, more than 80 percent participation from the village in the VLI meetings, indicates its importance in the eyes of the community. With further strengthening of the VLIs and SHGs, the project will ensure continued collective efforts from the institutions towards implementation of the by-laws and safeguarding their natural resources that impact their livelihoods. With further enhancement of the knowledge of the farmers on improved agricultural practices, the project can build upon its current base to reach out to other famers through the demonstration effect. However, various challenges present themselves in the realisation of the project outcomes which have been described in the next section.

10.5. Key Learnings and the Way Forward

The assessment has highlighted several learnings that emerge from the challenges faced by the project during implementation. These learnings will help improve the current processes within the project and assist in design of similar investments in the future. At the current stage, these learnings are presented at a project level to aid further discussions on project pathways between ABF and FES.

S.No	Area of Action	Issue to be addressed	Potential Pathways
1.	Need for improved synergies between VLI and *Gram Panchayat*	As has been pointed out earlier that structural issues in implementation of MGNREGA create limitations in realising the full potential of the scheme. Delay in payment of wages is a primary and critical challenge which discourages households from working under MGNREGA without the security of payment at the end of the day. Other issues include delay in preparation of estimates, sanction of shelf of works and monitoring while the work is going on as also the kind of work which is taken up (labour versus material specific). Though additional manpower (engineers and barefoot technicians) have been recruited for group of gram panchayats it will take some more time before the work gets streamlined.	This provides an opportunity for the project to strengthen the VLIs with a focus on creating collective pressure on the gram panchayats to sanction the work on time along with timely payment for the works and be held accountable for any implementation errors. Further, the VLIs by virtue of their perspective plans are in a strong position to demand for more collective works under the scheme than individual oriented work. Further, the VLIs need to pay more attention towards monitoring of the MGNREGA works with respect to the works being more labour oriented than material specific. Further, pending cases of dispute on common area boundaries between villages, or regulations on sharing of common resources between villages exacerbate the need for the Gram Panchayats to take necessary action. For such issues to be resolved, the Gram Sabha or the VLIs need to engage more with the Panchayat functionaries and act as a pressure group to enhance service delivery. The CRPs play a vital role in supporting the VLIs in informed decision making and engaging with members of the Panchayat to reach resolutions in a timely manner.
2.	**Ensuring women's active participation in decision making to achieve project objectives**	The findings reveal that while women's participation has been integrated into the processes by design at the community and household level, more needs to be done for women to play an active role in the village development.	More focus need to be laid on the sensitisation of the VLIs in encouraging women to voice their concerns in the forum, weigh in their opinions in the decisions taken and support them in undertaking livelihood activities through the SHGs. Further, the SHGs need continued support to build their capacities in identifying viable economic activities to supplement their incomes. The SHGs can be encouraged by the VLIs to play a more active role in monitoring of the common property resources. Promotion of women for the position of MGNREGA mates by the VLIs is a welcome move by the VLIs towards increasing the social and economic autonomy of women.

S.No	Area of Action	Issue to be addressed	Potential Pathways
3.	**SHG federations for realising economies of scale**	The SHG in Dhapada village, Rajasthan indicated its current reach and highlighted the need to register as a company for expanding its scale. They realise that the next step for them will be to connect with similar SHGs to create a cluster which will enable them to aggregate their products thereby reducing aggregation costs, increase supply of their products and service the market demand, expand the market coverage and enhance their negotiating powers with the dealers, as a collective. They seek the support of the project in undertaking this process.	Since most of the SHGs formed under the project are still at a nascent stage of developemnt, it may be too early to point out the need for creating clusters of SHGs to reap the strategic advantage of SHG clusters. However, as the SHGs (such as the one in Dhapada village, Rajasthan) advance into the next stage of undertaking income generation activities, it would be advisable to consider strategies of forming their clusters to reach economies of scale through product aggregation, access larger markets, and increase their negotiating power with dealers and buyers of SHG produce. While this process may take a more organic path of growth, the project can build its efforts towards crafting ways of federating these SHGs. Since the SHG clusters will transcend the boundaries of the village, suitable methods for creation of such clusters will be required to maintain the intricate linkage of the SHGs with the VLIs. A more detailed guideline of institutional arrangement of the SHGs and the VLIs for the federation process is available with FES which can supplement the recommendations.
4.	**Adequate support to the CRPs through re-distribution of responsibilities**	The CRPs are currently provided financial support by the VLIs through an honorarium of Rs. 4000-5000 per month, which depend on their performance. However, in light of their current roles spanning across three to four villages, the CRPs find little time to look for other opportunities of work to supplement their incomes. Their roles extend from engaging with households at the village level to interacting with panchayat and government officials for various activities. The travel, meetings and extensive documentation, as pointed out by the CRPs, often reduces their efficiency, as they tend to leave out some part of their responsibilities.	Additional support to the CRPs in the form of village animators or resource persons will help reduce the concentration of work load on this cadre which will help strengthen the service delivery. Thus, the project may consider the role of a women animators in every village to support the CRPs in their work. This would reap a two pronged benefit of delegating village level work to the animators, reducing the workload of the CRPs and creating opportunities for women to work in village development that would inherently promote well-being of women and children.

S.No	Area of Action	Issue to be addressed	Potential Pathways
5.	**Need to enhance farmer's access to credit and market linkages**	While the farmers reported to have benefitted from the improved agricultural practices, they seek additional support in timely sowing and sale of the crop which is critical to enhance the economic outcomes. Inadequate financial infrastructure, documentation processes and lack of information often ties down small and marginal farmers to local moneylenders for credit purposes. With middlemen taking away a significant slice of the farmer's profit from the produce, better access to markets with fair price for the produce is essential for securing farmer's livelihood.	Building institutions such as farmer producer groups provides the farmers with better negotiating powers as a collective, against the middlemen. Smallholder farmers who struggle to attain the minimum saleable lots accepted in most markets or whose volumes of production cannot justify the costs of investing in capital assets can derive the greatest benefits from joining a producer company. Timely information of supply and demand of produce and agricultural prices of outputs will help farmers make better crop decisions. While linkage with the Agricultural Produce Market Committee (APMC) will support the farmers in receiving fair prices, exploring and advocating for models such as 'farmer-to-consumer markets' under the Maharashtra State Agriculture Marketing Board (MSAMB)[21] are opportunities for the project to engage with. As per FES' feedback, they are in the process of considering a pilot on the same and may scale up in the next phase.
6.	**Grain banks and seed banks in the villages**	Absence of grain banks in the villages means that the farmers have to make their own arrangements to store the grains, which adds to their cost.	Creation of grain banks and seed banks will be helpful in augmenting backward and forward linkages for the farmers. Community grain banks help farmers store their grains in a protected area and also act as a decentralized storage and management of food at the community level, to address the problem of seasonal hunger due to floods or droughts or due to lack of livelihood options, particularly for women and children. Similarly, seed banks can help farmers to access seeds to grow crops during the next planting season or they can be used as an emergency seed supply when their crops are damaged and destroyed, for example, due to droughts. Further, women SHG groups can be used to monitor these seed and grain banks making the operations more accountable and transparent.

[21] https://www.msamb.com/

10.6. Additional Factors for Consideration for ABF

The project is well placed on its pathway to achieve its objectives towards augmenting households' income and securing the livelihoods of the rural households in a sustainable manner. Towards this, it is essential for the project to build a knowledge base for consolidating evidence of success at the field level. Further, such knowledge helps monitor the process and outcomes in a more efficient manner and allow learning to be a continuous process.

FES has already undertaken assessment of production of biomass and carbon stock under the project with scientific underpinnings to the process. Further, quarterly reports highlight the different types of interventions undertaken and the outputs achieved in stipulated periods. Moreover, baseline data of households is available for understanding the change over time. However, these databases are not linked together or systematically consolidated at the project level creating challenges in overall estimation of the project's outcomes through a continuous process. Further, the format of the quarterly reports need to be more outcome oriented with better collation of the flow of activities and the outputs by states, highlighting the effectiveness at the project level.

One of the key aspects of a Results Based Management (RBM) strategy is for actors to use information and evidence of the outcomes to inform decision making on the design, resource management and delivery of the project activities along with improving transparency and reporting. In turn, the processes for consolidation of information and evidence need to be robust for clearer actions to achieve the objectives. Thus, it is recommended that the process of data management, documentation, and dissemination is streamlined across the components of the project to enable a consolidated analysis of the impact of the investments made under the project; identify areas of concern that require attention; understand specific training needs for addressing the same; and, facilitate continued learning of the project staff for informed decision making.

ANNEXURES

ANNEXURE I: Key Information Areas for the Assessment

Table 14: Key information areas and data points mapped with the data sources

S.No.	Key information areas	Data Points	Data Sources
1	Change in income of households from baseline	• Household demographics (education, social status, caste etc.) • Size of land holdings • Household asset ownership • Number of livestock owned • Sources of employment • Household incomes from various sources • Farm based expenses on inputs for cultivation and livestock (seeds, fertilisers, fodder, water etc.) • Availability of fodder for livestock • Non-farm enterprises • Engagement in SHG activities • Household economic status • Utilization of social security schemes	• Primary quantitative household survey • Baseline data for comparison • FGDs with community/PRI members/Farmers/ SHGs/VLIs
2	Capacity building and strengthening of community based institutions	• Number of village institutions/ SHGs/ HLIs formed, • Social constitution of the CBOs • Number of perspective plans prepared • Leverage of SHG savings • Number of community resources persons trained • Households availed credit from formal institutions • Households reporting better market linkages • Participation in Gram Sabhas • Availability of social security schemes through panchayats • SHGs engaged in monitoring water usage; grazing land; role in village development plans	• Primary quantitative and qualitative survey • Baseline and monitoring data and reports from ABF/ FES • FGDs with community/PRI members/Farmers/ SHGs/VLIs
3	Improve access to water for irrigation	• Adoption of water saving technologies • Construction or renovation of water harvesting structures, village tanks, farm ponds, cattle ponds, anicuts • Water recharge and increase in water table • Increase in yield due to moisture in the field • Wells and bore wells rejuvenated in the command area	• Monitoring data and reports from ABF/ FES • Qualitative interviews (FGDs and KIIs) with farmers, SHGs, PRI members, FES project team, VLIs
4	Diversification of agriculture and enhance agriculture productivity through knowledge management	• Trainings and awareness events • Awareness of enhanced practices and improved technologies • Awareness of government schemes • Adoption of better farming practices • Access to formal credit • Awareness of formal credit • Seed and grain banks established or revived	• Monitoring data and reports from ABF/ FES • Qualitative interviews (FGDs and KIIs) with farmers, SHGs, PRI members, FES project team • Primary quantitative household survey
5	Restoration of common property resources	• Awareness of enhanced practices and improved technologies; construction of natural infrastructure • Fencing of grazing areas and monitoring by HLIs • Improvement in ground water tables	• Monitoring data and reports from ABF/ FES • Qualitative interviews (FGDs and KIIs) with farmers, SHGs, PRI

S.No.	Key information areas	Data Points	Data Sources
		• Availability of drinking water for animals • Whether secure tenure of local communities over commons arranged	members, FES project team
6	Make small and marginal farming activities viable;	• Area under cultivation • Reduction in input costs • Access to fodder and fuelwood from common areas • Crop production (types of crops/varieties) • Use of inputs (manure, seeds, IPM etc)	• Monitoring data and reports from ABF/ FES • Quantitative and Qualitative interviews (FGDs and KIIs) with farmers, SHGs, PRI members, FES project team
7	Diversification of livelihood options	• Employment opportunities available with households • Sources of income • Income generating activities in SHGs • Availability of social security schemes such as MGNREGA	• Primary quantitative household survey • FGDs with community/PRI members/Farmers/ SHGs
8	Develop short and long term strategies for market linkages	• Markets where surplus / products sold – local or beyond • Means of linking with market – aggregators, intermediaries, direct • Market demand and supply • Value addition – grading, storage, processing	• Monitoring data and reports from ABF/ NMSWDF • Qualitative interviews (FGDs and KIIs) with farmers, SHGs, PRI members, NMSWDF project team

ANNEXURE II: List of Secondary Documents Reviewed

a. Quarterly review of project progress shared by ABF
b. The project proposal presented by FES to ABF highlighting the details of the project objectives, approach, areas, and interventions.
c. The Socio-Ecological Approach to Livelihoods: A Concept Note prepared by FES
d. The baseline data shared by FES
e. Documentation on livelihood interventions under the project shared by FES
f. Note on community resource persons shared by FES
g. Area Profile of the project districts shared by FES
h. Data on biomass assessment shared by FES

Annexure III: Estimation of Sample Size for the Quantitative Survey

Key assumptions in calculation of the sample size are:

- A finite population of 8439 beneficiaries has been covered by the project in year 1.
- The sample size will enable comparison of baseline and mid-line groups **at the project level** and not allow for inter-district comparisons
- Considering the objective of the midterm evaluation, the sample size will allow the assessment of change in income levels from baseline to midterm.

Sample size would be calculated at project level, using the 'differences method' formula as indicated in the RFP. The formula (Cochran's 1977), has been used for calculating the sample size is as provided below, where:

$$\frac{(z^2)pq}{d^2}$$

Where:
p = estimated proportion of the population, set at 50% for maximum variance;
q = 1 – p;
z = standard score corresponding to the confidence interval set at 1.96;
d = margin of error, set at 5%

Thus, the estimated minimum sample size for the evaluation is 384 households. Adjusting for finite population correction (FPC) factor (FPC = ((N*n)/(n+(N-1)) *where, (N=Population Size and n=Sample Size)*, the sample size is 367 households**.** Adding a buffer of 10% of households, the sample size to be covered across the two districts is 400 households.

Annexure IV: List of Villages Selected for the Quantitative Survey

State	District	Block	GP	Village
PROJECT AREAS				
KARNATAKA	CHIK BALLAPUR	BAGEPALLI	MARAGANAKUNTE	POKAMAKALAPALLI
KARNATAKA	CHIK BALLAPUR	BAGEPALLI	GORTHAPALLI	GORTHAPALLI
KARNATAKA	CHIK BALLAPUR	BAGEPALLI	PATHAPALYA	PATHAPALYA
KARNATAKA	CHIK BALLAPUR	BAGEPALLI	THIMMAMPALLI	G.MADDAPALLI
KARNATAKA	CHIK BALLAPUR	BAGEPALLI	GORTHAPALLI	G. CHERLOPALLI
KARNATAKA	CHIK BALLAPUR	SIDLAGHATTA	DIBBURAHALLI	BACHANAHALLI
KARNATAKA	CHIK BALLAPUR	SIDLAGHATTA	BASETTAHALLI	DODDAGUMMANAHALLI
KARNATAKA	CHIK BALLAPUR	SIDLAGHATTA	S.DHEVAGANAHALLI	NERALEMARADAHALLI
KARNATAKA	CHIK BALLAPUR	SIDLAGHATTA	THIMMANAYAKANAHALLI	G.KURUBARAHALLI
KARNATAKA	CHIK BALLAPUR	SIDLAGHATTA	DIBBURAHALLI	JARUGAHALLI
RAJASTHAN	BHILWARA	MANDAL	THANA	BATERI
RAJASTHAN	BHILWARA	MANDAL	THANA	THANA
RAJASTHAN	BHILWARA	MANDAL	BHABHANA	ALAGWAS
RAJASTHAN	BHILWARA	MANDAL	THANA	DHAPRA
RAJASTHAN	BHILWARA	MANDAL	SANUNDA	SAHNUNDA
RAJASTHAN	BHILWARA	MANDALGARH	MANGTHALA	SAIPEEPLA
RAJASTHAN	BHILWARA	MANDALGARH	JHANJHOLA	ACHALA JI KA KHERA
RAJASTHAN	BHILWARA	MANDALGARH	SRINAGAR	MUKAN GARH
RAJASTHAN	BHILWARA	MANDALGARH	BIKRAN	BEEKRAN
RAJASTHAN	BHILWARA	MANDALGARH	BARUNDNI	BARUNDNI
CONTROL AREAS				
RAJASTHAN	BHILWARA	MANDALGARH	SARTHALA	LATALA
RAJASTHAN	BHILWARA	MANDALGARH	SARTHALA	LAXMI NAGAR
KARNATAKA	CHIK BALLAPUR	SIDLAGHATTA	DODDATEKAHALLI	MADDEGARAHALLI
KARNATAKA	CHIK BALLAPUR	SIDLAGHATTA	MARAGANAKUNTE	NARASAPUR

Annexure V: List of Villages selected for the qualitative survey

State	District	Block	Village	Type of Group
Karnataka	Chik ballapur	Siddlaghatta	Kondapagarahalli	Village Institution, Self Help Group
Karnataka	Chik ballapur	Siddlaghatta	G kurburahalli	Village Institution
Karnataka	Chik ballapur	Siddlaghatta	Neralamaradhalli	Farmers
Karnataka	Chik ballapur	Siddlaghatta	Ragimakkaladinne	Control
Karnataka	Chik ballapur	Siddlaghatta	Bachanahalli	Farmers
Karnataka	Chik ballapur	Siddlaghatta	Kamabalahalli	Self Help Group
Karnataka	Chik ballapur	Bagepalli	G cherlopalli	Self Help Group, Village Institution
Karnataka	Chik ballapur	Bagepalli	Jigavandlapalli	Self Help Group
Karnataka	Chik ballapur	Bagepalli	Jogireddipally	Village Institution, Farmers
Karnataka	Chik ballapur	Bagepalli	Narsapura	Control
Rajasthan	Bhilwara	Mandal	Thana	FGD with SHG and VLI, and farmers from Thana and Dhapra
Rajasthan	Bhilwara	Mandal	Dhapra	FGD with SHG, FGD with all the CRP's in Mandal block
Rajasthan	Bhilwara	Mandalgarh	Barundi	FGD with SHG
Rajasthan	Bhilwara	Mandalgarh	Achala ji ka khera	FGD with VLI and CRP's of Mandalgarh block
Rajasthan	Bhilwara	Mandal	Bheelon ka badia	FGD with VLI
Rajasthan	Bhilwara	Mandalgarh	Latala	FGD with farmers in control village

Annexure VI: Details Required as per the Terms of Reference

Data as per sample study

Annexure Table 1: Beneficiaries in the corresponding income range

Income range	Beneficiaries in the corresponding income range						Change in average annual income***	
	Baseline data*			After intervention				
	No	%	Average Income	No	%	Average Income	Amount	%
0-12,000**	1755	20.8	2481.03	28	7.3	7491.3	-	-
12,001-36,000	3008	35.6	23352.92	91	23.8	23792.6	-	-
36,001-60,000	1523	18.0	47131.84	77	20.2	46260.8	-	-
60,001-84,000	848	10.0	71198.58	70	18.3	70217.1	-	-
84,001-100,000	316	3.7	91270.06	28	7.3	91885.5	-	-
Over 1,00,000-	989	11.7	195509.4	88	23.0	232899.3	-	-
Total	8439	100	50830.4	382	100	88777.4	37947.3	74.6

**Baseline data provided by the NGO partner*
***excludes those with net income less than 0*

**** Comparison of mean income by categories between baseline and mid-line will show an inaccurate picture as the number of respondents (in baseline and midline) is not the same. Hence, change in average annual income has not been provided. Comparison of proportions provides a better measure of assessment.*

Annexure Table 2: Average Income per beneficiary before and after intervention

Average income per beneficiary before the intervention	50830.4
Average income per beneficiary after the intervention	88777.4
Increase in average income	37947.0
Increase in average income (in %)	74.6

Data as per NGO partners records

*Annexure Table 3: Beneficiaries in the corresponding income range (As per NGO records)**

Income range	Beneficiaries in the corresponding income range						Change in average annual income**	
	Baseline data			After intervention				
	No	%	Average Income	No	%	Average Income	Amount	%
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	-	-
Total	1134	100	45,022	1134	100	84,429	-	-

***** *The baseline study was conducted by taking 1134 HHs as sample from the total baseline. This included households intervened in year 1 and 2.*

*** Comparison of mean income by categories between baseline and mid-line will show an inaccurate picture as the number of respondents (in baseline and midline) is not the same. Hence, change in average annual income has not been provided. Comparison of proportions provides a better measure of assessment.*

Annexure Table 4: Beneficiaries in the corresponding income range (As per NGO records)

Total no. of beneficiaries till the cutoff date of Dec-15	8439 (for sample survey-1134)#
Average income per beneficiary before the intervention	50830.4
Average income per beneficiary after the intervention*	-
Increase in average income*	-
Increase in average income (in %)*	-

 # The baseline study was conducted by taking 1134 HHs as sample from the total baseline. This included households intervened in year 1 and 2.

**Data not available as per FES records*

*Annexure Table 5: Beneficiaries by intervention (As per NGO records)**

Income range	Beneficiaries in the corresponding Interventions						Change in average annual income	
	Baseline data			After intervention				
	No	%	Average Income	No	%	Average Income	Amount	%
Intervention 1								
Intervention 2								
Intervention 3								
Intervention 4								
Intervention 5								
Intervention 6								
Total								

* *Intervention wise data was not collected during baseline or midline as the interventions are community specific and not beneficiary specific. This information has been documented during discussions with ABF.*

Other Details Required

Annexure Table 6: Cost per beneficiary (As per NGO records)

	Target (For the target period)	Actual (For the target period)
Beneficiaries	8000	8439
Cost Per Beneficiary	5486	3046
Increase in average income*	-	-

**Provided in previous tables*

NRMC