Climate Resilient Development

Synthesis Report

Towards adaptation to climate change

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intercooperation
Natural Resource Management
Rural Economy
Local Governance and Civil Society

V&A

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Partner
Keystone Foundation
Tamil Nadu

Theme 5-Biodiversity

10

Improving Livelihoods

of Indigenous Communities in the Nilgiri Biosphere Reserve

The Project

Keystone Foundation's NRM programme, partly supported by SDC/IC NGO programme has 4 main facets - forest based livelihoods, biodiversity conservation, water resource management and reviving traditional agriculture systems. The NRM programme was initiated in 1995 in the Nilgiris Biosphere Reserve (NBR) and works with 6 different indigenous communities (henceforth `Adivasis'). The objectives of this ongoing programme are:

- To improve livelihoods of Adivasi communities of the NBR, particularly the honey hunters and collectors of Non-Timber Forest Produce (NTFP).
- To conserve forest biodiversity through ecological monitoring of NTFP, sustainable harvesting systems and technology, trade and value addition.
- To study communities and their water management systems in hill areas and implement small drinking water projects.
- Conduct research and revive traditional agriculture systems towards improved food security and household nutrition of the indigenous communities.

Project Location

Vulnerability Context

The Nilgiri Bioshpere Reserve (NBR) is a contiguous unit of dense forest located in south-west India at an altitude ranging from 300 m to 2,623 MSL. It is a part of the Western Ghats spread across three southern states of India Kerala, Tamil Nadu and Karnataka. The NBR includes two of the ten bio-geographical zones of India. Also, it is one of the world's biodiversity hotspots with six protected areas located within it.

The NBR falls in the central and south Sayhadris Agro Ecological Region (AER 19.2) which is a hot, moist, sub humid region with deep loamy to clayey red and lateritic soils, low to medium Available Water Capacity and a Length of Growing Period of 120 to 270 days. The soils in the NBR are generally deficient in plant nutrients and are acidic. However, they have a high capacity to regenerate. The climate is tropical and marked by heavy monsoons. The rainfall varies from 4,600 mm in the western ranges to less than 800 mm in the eastern ranges. The eastern and northern ranges suffer from drought conditions with a few showers from the south-east monsoon. The average temperature in the NBR ranges between 10 - 30 degrees Celsius. Regions located in the upper reaches experience sub zero temperatures and suffer from frosts during the winter months.

Vulnerability Context

The NBR is home to several indigenous communities who are dependent on the natural resources for their livelihood. The forests and abundant water sources of the NBR are the fountainhead for the plains below. However, tea and coffee plantations have replaced the native vegetation in large areas. Commercial plantations of exotic tree species have replaced grasslands while many wetlands, that are rich in bio-diversity, have been converted into vegetable fields. Un-controlled growth of tourism has led to rapid changes in the land use and over exploitation of resources such as water. Many migrant workers have come into the region to cater to these new economic activities, leading to the socio-economic marginalization of the indigenous communities and the collapse of several community-based systems for natural resource management.

The reduction in the biodiversity has a direct impact on the population of native bee colonies. Deforestation and replacement of indigenous forests by commercial plantations have reduced the availability of NTFP impacting livelihoods of the Adivasis. There are also issues related to access and ownership of forestlands.

Livelihood Assets and Impacts of the Project Interventions

The interventions ranged from improving the livelihoods of traditional honey hunters to overall conservation and management of natural resources in the region. This helped in generating the capitals discussed below:

Physical Capital

Wild Bee Honey Hunting and Beekeeping: As collection and sale of Rock Bee honey was a major occupation of many Adivasi communities, a honey purification and bottling plant has been established. Honey is purified, bottled and sold under the brand name "Last Forest Natural Products". Certain sections of the local communities also practice apiculture and the project has given them box hives.

Market links: Infrastructure in the form of a chain of shops - "The Green Shops", has been set up. They sell a wide range of products grown or produced by the local communities.

NTFP and Post-harvest technology: Six production centers have been set-up to add value to agricultural and forest produce collected by the Adivasis. It is at these centres that the various products are collected, stored, graded and packaged to enhance their value.

Soil and Moisture conservation measures: In-situ soil and water conservation works such as trenches, bunds, poly-lined tanks and micro-irrigation on a large scale has enabled several Adivasi households to store water and also irrigate their fields and nurseries.

Water conservation: To overcome the negative impacts of land use changes in the dry parts of the NBR, key natural watering holes and points (such as tanks, swamps, streams located near villages) were either deepened or revitalized. In some places new wells were dug. High-density poly-ethylene pipes fitted with taps were laid from these sources up to the villages to provide water for drinking and irrigation.

Natural Capital

Resource assessment studies were undertaken in 5 zones from where significant amounts of NTFP and wild bee honey are harvested. Based on the findings, a strategy for sustainable NTFP harvesting and value addition was developed to ensure good economic returns to communities while also ensuring the conservation of the natural resource base.

Community based ecological monitoring of forest produce, particularly wild bee honey, is undertaken at regular intervals. The results are used to arrive at seasonal sustainable harvesting plans.

The Adivasis have been encouraged to bring back 60 to 70 percent of their land under mixed cropping comprising food and commercial crops. To support this, seed banks have been set up in all the project villages. Horticulture and tree species providing NTFP are raised in village level nurseries for local use. The state Forest Department also purchases saplings from these nurseries and plants them in other degraded areas of the NBR.

Social Capital

A Tribal Advisory Committee comprising villagers who practice diverse traditional occupations meets on a regular basis to develop work plans, future strategies and share information on current issues.

The production centres are managed by small groups of enthusiastic women. Each centre has democratically elected leaders and an accountant selected for numerical skills. Marketing is handled by the Enterprise Development wing of Keystone that has also developed a network of dealers and suppliers.

Human Capital

Based on the natural resource base, traditional occupations and the needs of the people, several training programmes have designed and conducted. Ecological monitoring, resource assessment and mapping was one of the important skills imparted.

Women and youth employed at the production centres are trained in value addition to NTFPs and other products. The group is also trained in accounting and management skills. Village members are constantly being trained to shoulder more responsibilities.

Financial Capital

The market links for the sale of value added products has helped substantially increase income levels of Adivasi households. In addition, agroforestry and revival of mixed cropping have also contributed to overall household income.

Transforming Structures & Processes

Linkages between communities and the State Forest Department, district administration, market distributors and scientific and research institutes in India and abroad have been promoted and strengthened.

The biodiversity conservation, forest based livelihood and enterprise development components have been recently clubbed to form the NTFP Network Programme. It is now a part of a collaborative network of non-governmental and community based organizations in South and South-East Asia that seeks to strengthen the capacities of forest dependent communities for sustainable management of natural resources. Such linkages bring the best global knowledge and expertise to strengthen local and traditional livelihoods of the indigenous communities of the NBR.

Saroja - Irular woman- Production Centre Manager

I have studied till the eighth standard. I am the manager of Banglapadigai Production centre. We are a group of 12 women who run this centre. We procure both NTFPs and agriculture produce brought by the Adivasis in the area. Our centre adds value to Gooseberry, Poochakai (Sapindus emarginatus), Phoenix grass, Silk Cotton, Pepper, Coffee, Lime, etc.

We have also been trained in making mattresses using silk cotton fiber, cushions, paper bags and envelopes. We are now being trained on marketing our produce locally. Life was tough earlier. We either worked in our fields or worked in the tea/coffee estates or had to sell our NTFP at very low rates to traders. Now because of the production centre we are able to earn better than before and are also able to pay for medical and health check-ups and facilities. We all feel very happy when we make a profit and get a bonus on the products we make.

Because I have been trained to make so many different products and know where to sell then I am confident I can make a good living even if this procurement centre is not there.

Livelihood Outcomes

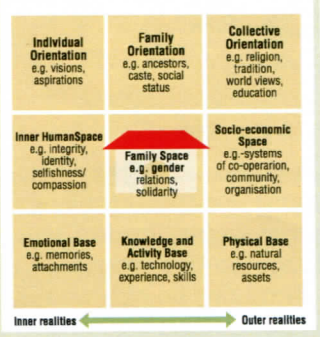
Regular ecological monitoring and resource assessment studies with community involvement lead to sustainable extraction of honey, thereby not only securing livelihoods of the indigenous communities but also ensuring continued existence of economically important tree and wild bee populations.

The revival of mixed cropping and agroforestry has helped to diversify and provide multiple sources of income during periods of stress and/or drought.

Establishment of the production centres and streamlining sale of NTFPs provides employment opportunities and assured income by improving knowledge and skills of the communities.

Increased income has improved health and living conditions of the Adivasis.

Regular monitoring and impact assessment of various project interventions have resulted in improved awareness levels amongst the community about the endangered species, overall forest protection, ways to control fire incidences and sustainable harvesting of NTFPs.

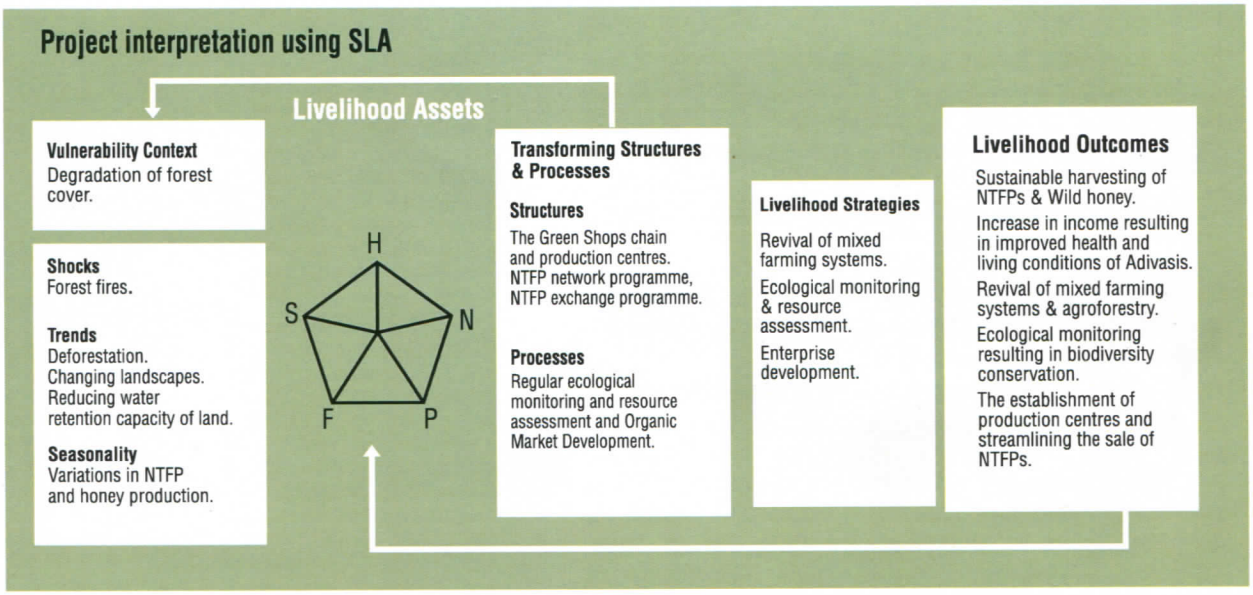


9 Square Mandala

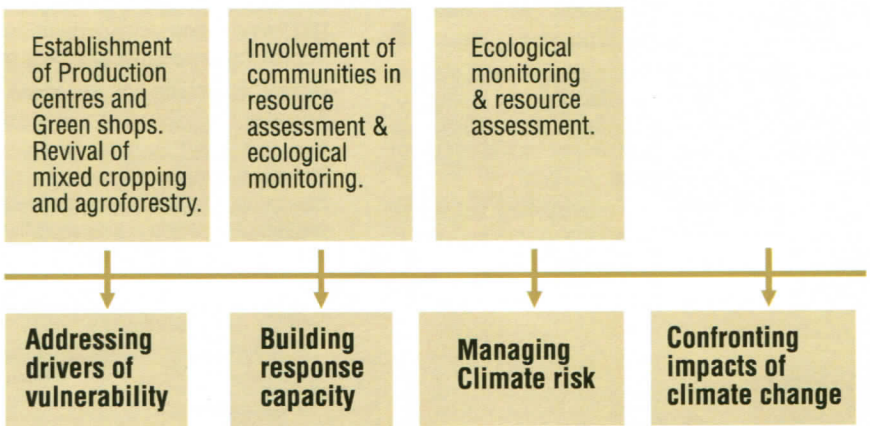
The Nine square mandala was constructed with members of the Tribal Advisory committee promoted by Keystone Foundation for over 10 years. The purpose was to gain insights into their perception and involvement in scientific processes like resource assessment studies, ecological monitoring, post harvest technology, planning and strategy development. The interaction brought out the fact that the interventions have not only improved livelihoods but the involvement in making harvesting plans, awareness and knowledge of sustainable harvesting, marketing, value addition is a source of pride for the community and also provides them a sense of security.

ORIENTATION	**9 - Individual Orientation** Being members of the tribal advisory committee we are able to give inputs into the planning and strategy development at Keystone from our traditional knowledge which is not known to others.	**8 -Family Orientation** The production centres have trained us in many types of work . We can get employment from various sources now. We can train others on many things.	**7 - Collective Orientation** Honey collection has reduced considerably over the past 20 years. Due to less rainfall, there is less flowering resulting in less honey production. But we are now harvesting honey regularly and in much larger quantities than before. The ecological monitoring helps us know how much honey is available and where. So we harvest accordingly. Because of this the bees are not killed and we can get honey regularly.
SPACE	**6 - Inner Human Space** We never knew so many things. We did not know how to interact and speak in public places. Our knowledge has increased through participating in meetings regularly. Planning extraction and making harvesting plans is very important as rainfall is not like before and tree cover is also decreasing.	**5 - Family Space** The marketing done by Keystone and the training given by then have improved our livelihoods. We can now pay for better medical services.	**4 - Socio-Economic Space** The marketing is better and we get better prices because of the production centre. If the quality is good and the sales are high we get a bonus.
BASE	**3 -Emotional Base** Working on tea estates is difficult. Other sources of employment are few here. Due to less income we could not pay for health services.	**2 Knowledge and Activity Base** We have our traditional knowledge on extracting NTFP and wild bee honey. This is important seasonal income. Local traders buy the produce at very low rates from us due to low quality of the produce. We did not know where to sell our produce.	**1 - Physical Base** Water is the most important resource for us as everything depends on it - our forests and agriculture. The rainfall is not like before, trees have also decreased. But having coffee, tea plantations, fruit and other trees in our agriculture lands along with agriculture crops is now beneficial for us.

Project interpretation using SLA



Summarizing project interventions using the Continuum



Community based scientific research, analysis and planning in the form of ecological monitoring and resource assessment is not only conserving the vulnerable natural resource base but is building the response capacity of the indigenous communities to plan and harvest produce in a sustainable way. This ensures continued productivity of economically important flora and fauna as well as livelihood sustainability. In addition, the data generated from long term research on flora and fauna will help in better understanding of climate change impacts on forest ecosystems thereby contributing to development of adaptation strategies to mitigate climate risks.

Recognizing the benefits from this restoration method, the Forest Department, Tamil Nadu, through its Joint Mangrove Management Programme has promoted this measure in several other parts of the region.

Sustainable forest based livelihoods

Case study 10: Improving livelihoods of indigenous communities in the Nilgiri Biosphere Reserve - Keystone Foundation

The project is in the Nilgiri Biosphere Reserve (NBR) which is a contiguous unit of dense forest with wide ranging landscape, located in South West India at an altitude ranging between 300 m to 2,623 MSL. It represents one of the world's biodiversity hotspots with more than 3,700 plant species and 684 vertebrate species of which 156 are endemic.

The NBR is home to several indigenous communities that depend on natural resources for their livelihood. The local ecological balance has been under pressure for some time due to changes in natural processes and anthropogenic factors. This resulted in reduction of native bee colonies and biodiversity; mono crops replacing mixed cultivation systems affecting nutrition; reduced food security of the communities; and reduced water retention capacity of lands.

The project focus was on 4 main facets, namely, forest based livelihoods (NTFP, wild bee honey collection, and apiculture), biodiversity conservation, water resource management and reviving traditional agriculture systems.

A scientific approach through systematic resource assessment and ecological monitoring helps in understanding different levels of production and accordingly plan for harvesting honey even during stress periods (low and erratic rainfall and temperature fluctuations) wherein honey availability, in general, is reduced.