



Dendrophthoe falcata – a hemi parasitic plant commonly found, documented in the People’s Biodiversity registers compiled by the program

An integrated approach to Education, Conservation and Livelihood

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Kaigal Education and Environment Program

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Abstract

The Kaigal Education and Environment Program was conceptualized in 2008 as an integrated approach combining education, conservation and sustainable livelihoods, rooted in social ecological principles. The program works in Chittoor district, along the fringes of the Kaundinya Wildlife Sanctuary. The communities here are marginalized mixed communities; many being scheduled castes/ tribes. The Yanadi tribal community is the predominant tribal group in this area. The underlying theory of change is that human communities are an interwoven part of the local ecology and sustainable interventions must evolve with and include the local communities - whose right and responsibility it becomes to protect and conserve the local ecology they are a part of.

The case study attempts to describe this through three distinct axes of intervention – conservation, education and livelihood programs; however, it must be remembered that these are not independent. Cultural stability, economic independence and societal acceptance of these communities are dependent on all these three interventions working together.

Over the period of the intervention the program has improved the conservation status of different ecosystems covering over 14000 hectares, touching over 26000 people across 60 villages. Over 300 tribal households have been directly impacted through the intervention; the community enterprise set up as part of this program is supporting rural and forest based livelihoods. The most important outcome that emerges, however, is that changing the relationship of the human being to the environment is the cornerstone for sustainable development.

Kattai paththi solli kudunga (Teach them about the forests)¹

- A Case Study of the Kaigal Education and Environment Program

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A tale of two snakes

It was August 2008. There was a visitor to the Kaigal Conservation Centre (“Centre” or “Kaigal Centre), a man passionate about snakes. The field co-ordinator at Kaigal, an amateur herpetologist himself had just noticed a snake hanging from the tiled roof of the building that was the office building, and pointed it out to the visitor. The species seemed unfamiliar and they suspected knew it was a new species. They finally caught it after two months, - it was an exciting day at the Centre as it was confirmed that it was a new species².



roof of the building that was the office, and showed to the visitor. They knew it was a new species, instantly. Tracking the snake day and night, they finally caught it after two months, it was an

- 1 “Kattai paththi solli kudunga – teach them about the forests, this is how Duggeppa, a Yanadi tribal elder envisioned the education and conservation program along the edges of the Kaundinya Wildlife Sanctuary. We could not think of a more evocative title for this case study.
- 2 It was identified only four years ago earlier as a new species , - the Srilankan flying snake *Chrysopelea taprobanica*

exciting day at the Centre as they found out it was a new species³. Thus started a program focused on studying snake diversity - the members at the Kaigal Centre, the teachers working with the learning centres for tribal children and the students participated. Jyothi, a tribal girl from one of the villages, returned one day after a forest walk holding a baby krait in her hand, much to the horror of her mentors!



Fast - forward a few years to January 2012; there were students visiting from the Rishi Valley School for an environment education program. Jayapal, the teacher-turned-conservation biologist, and another field co-ordinator arrived at the Centre with two large bags. As the wide-eyed students looked on with wonder and perhaps some fear, they opened the bag and carefully took out a python they had rescued from the local village. Jayapal's hands were caressing the python as one would a baby while he described how he had to

persuade the local village community to release the python back to the forest and not hurt it. It was held safely in the Centre as they waited for the Officials from the Forest Department to come and collect it.

What ties together these seemingly different instances is an approach to conservation, education and community. Education, livelihood and conservation are integrated in a seamless whole, providing a model for a bottom up, community led educational programme for sustainable development.

And that is the story of the Kaigal Education and Environment Program.

The beginnings

It began with the simple, yet powerful words, from two knowledge holders from the Yanadi tribe, a Scheduled Tribe living in large pockets in Andhra Pradesh. "You are talking to us about seeds and forests can you do something for our children?" Subbarayappa had asked 10 years ago when the team that went to the Mugilipodalarevu village, for tree planting took shelter outside his home during a sudden downpour. "Teach our children, well, teach them about the forests", exhorted Duggeppa as he cleared his goat shed to create a learning corner for the children in Kalligutta village, 17 km away. The journey of the Kaigal Education and Environment Program begins with these two thoughts.

Sudha, who taught Biology and Environmental Sciences at The Valley School, and an ecologist by training, was asked to establish the Kaigal Conservation Centre at a site near the Kaundinya Wildlife Sanctuary. This was in the early years of the 2000s when the rumblings of large scale destruction of habitats were no longer possible to ignore. When the first batch of students arrived in Kaigal to document the biodiversity and map the land and the usage pattern, what they saw was vast swathes of degraded land, in an area very loosely and almost carelessly termed as scrub jungle or waste land.

With the support of Krishnamurti Foundation of India (KFI) and a grant from UNDP, Sudha, her colleague Premnath, the group of students from The Valley School along with local communities documented the biodiversity, built a germ plasm bank and attempted to educate the community about conservation. The attempt was to relate to the local communities located around the degraded

3 It was discovered only four years ago as a new species, the Srilankan flying snake *Chrysopelea taprobanica*

land and work with them in the protection and regeneration of a large piece of the degraded land. The project set up a seed bank, forest nursery and a training centre to help build awareness about conservation and local biodiversity and was an exemplar for a participatory approach to biodiversity conservation that drew upon and documented local knowledge. Upon successful completion of the project, the KFI decided to appoint a caretaker for the land and also made a budget provision for conservation. And this is where this case study would have ended.

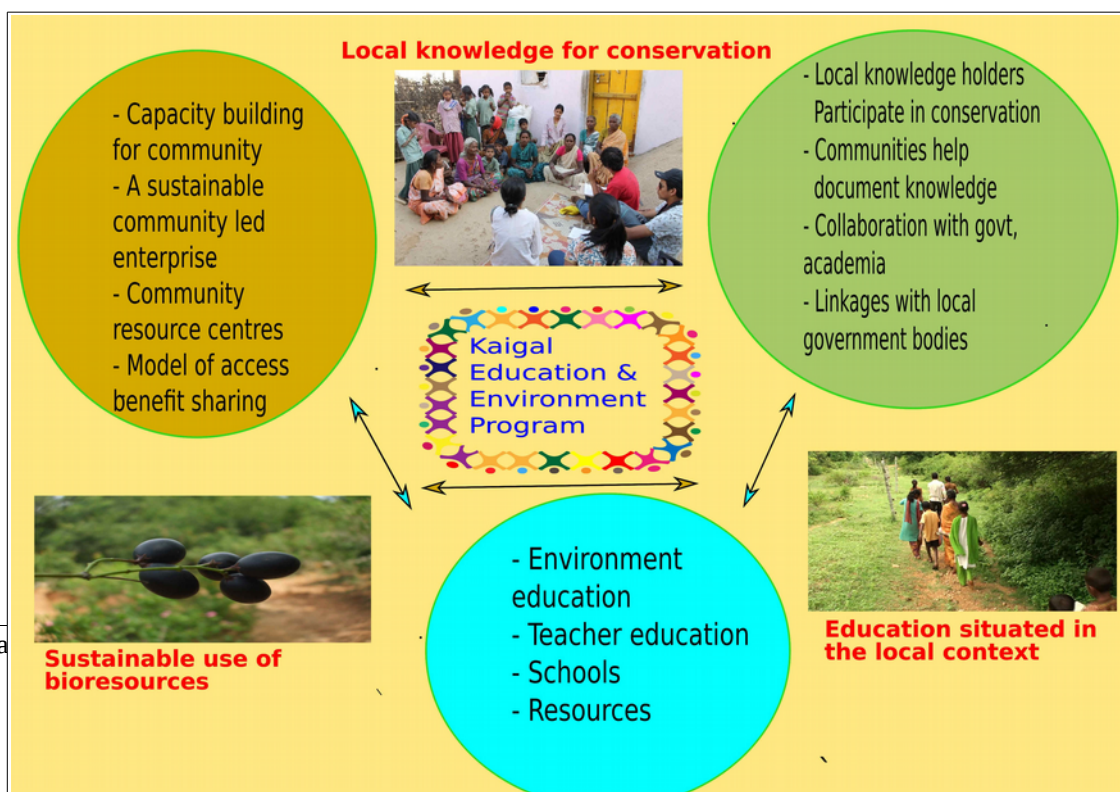
But the words from these two tribal elders changed the course of the program.

For the team at Kaigal though, these words merely affirmed and reinforced what had already been forming in their mind. That there is a need for a deeper engagement with the community, for building mutually sustaining relationships between the forests and the human being for developing ecologically restorative and sustainable development paradigms. The intervention at Kaigal was thus conceptualized in 2008, in a three pronged manner - education that affirms the community, conservation that is anchored by the community and livelihoods that can support, protect and nourish the local ecology.

An overview of the program

Environmental degradation and its affect on all life on the planet is one of the greatest challenges that human society faces today. Forests and wilderness the world over are under great stress and saving and increasing biodiversity is an urgent concern. Responding to this challenge, and educating for a sustainable development involves working in several dimensions – skills, livelihoods, ecology, communities, equity and justice. In a large, heterogeneous diverse country like India, hierarchies of caste, economic conditions and gender inequalities pose additional constraints.

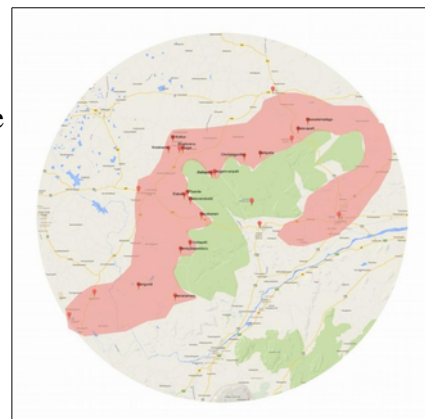
The Kaigal Education and Environment Program, working in tribal and rural communities adjoining the Kaundinya Wildlife Sanctuary in Chittoor District of Andhra Pradesh is one such intervention - educating for conservation and sustainable development. The program has worked in and around the Kaigal Valley near the town of Palamner where the Krishnamurti Foundation India has established the Kaigal Conservation Centre. This area is surrounded by the forests of the Koundinya Wildlife Sanctuary (an elephant reserve) on three sides and is bound by the state highway linking Palamner and Kuppam in Andhra Pradesh on the fourth.



Having started as an outreach program for the Environmental Science students from The Valley School, the Kaigal Education and Environment Program was conceptualized in 2008 as an integrated approach to conservation, rooted in social ecological principles. Working to create stable communities has been the core belief of this program, bringing together communities and ideas.

The program has worked with state and national level institutions in bringing together local communities and contributing to collective knowledge building. This has resulted in improved awareness and involvement of people in habitat restoration, capacity building and skill building of local communities and situating biodiversity conservation within the local panchayats.

The community run local enterprise has been able to demonstrate a possible model for sustainable forest management and sharing of bio-resources. The schools for the tribal children have made sure that all the children in the tribal villages receive formal schooling.



Map of the intervention area

The location and context

The Kaigal village is just a 3 hour, 140 km journey from Bengaluru; yet it is a world apart. You turn near Mulbagal from the Bangalore Chennai highway and follow the winding roads as it takes you into Andhra Pradesh. Fields line either side of the single road now under repair for the laying of the water canal to bring water from the Krishna River. This road meets the Palamner Kuppam state highway; the Kaigal village is situated off this highway. The Kaigal Valley, the intervention area of the Kaigal Education and Environment Program extends between Palamaner in the East and Kuppam in the West in Chittoor District of Andhra Pradesh. Almost all the villages covered in the intervention lie along the boundary of the Kaundinya Wildlife Sanctuary, seen in green on the map.

Local biodiversity

The site where the Centre is located has a small rivulet running through a valley, which also forms a waterfall, 'the Kaigal Fall', once considered sacred by the local communities. The water here is even today regarded as having medicinal qualities. This rivulet ultimately joins the Palar River.

Forest and Wildlife: The region is characterised by wet and dry deciduous and scrub vegetation with

seasonal water sources that are largely small streams, tributaries of rivers, lakes and ponds. The common natural vegetation in the villages are *Albizia amara*, *Wrightea tinctoria*, *Pongamia pinnata*, *Sapindus emarginatus*, *Tamarindus indicus* and *Holoptelia integrifolia*. The common shrubs are *Randia deumatorum*, *Toddalia asiatica*, *Dodonaea viscosa*, *Dichrostachys cineria*, *Gmelina asiatica*, *Canthium parviflorum*, *Calotropis gigantea* and of course *Lantana camera*. *Sizygium cumini* and *Terminalia arjuna* are common near water bodies.

The forests abound in a large diversity of flora and fauna. Some of the endangered and threatened flora of this region are *Decalepis hamiltonii*, *Gardenia gummifera*, *Gardenia latifolia*, *Madhuca indica*, *Shorea thumbaggia*, *Shorea tellura*, *Gloriosa superba*, *Terminalia chebula*, *T. arjuna*, *Chloroxylon swetenia* and many more.

Threatened larger fauna like the Asian Elephant, Slender Loris, Wild dogs, Sloth Bear, Star tortoise, Rock Python, the Indian Armadillo, a new species of Flying Snake (*Chrysopela taprobronica*), the

endangered Golden Gecko and many more occur in this region.

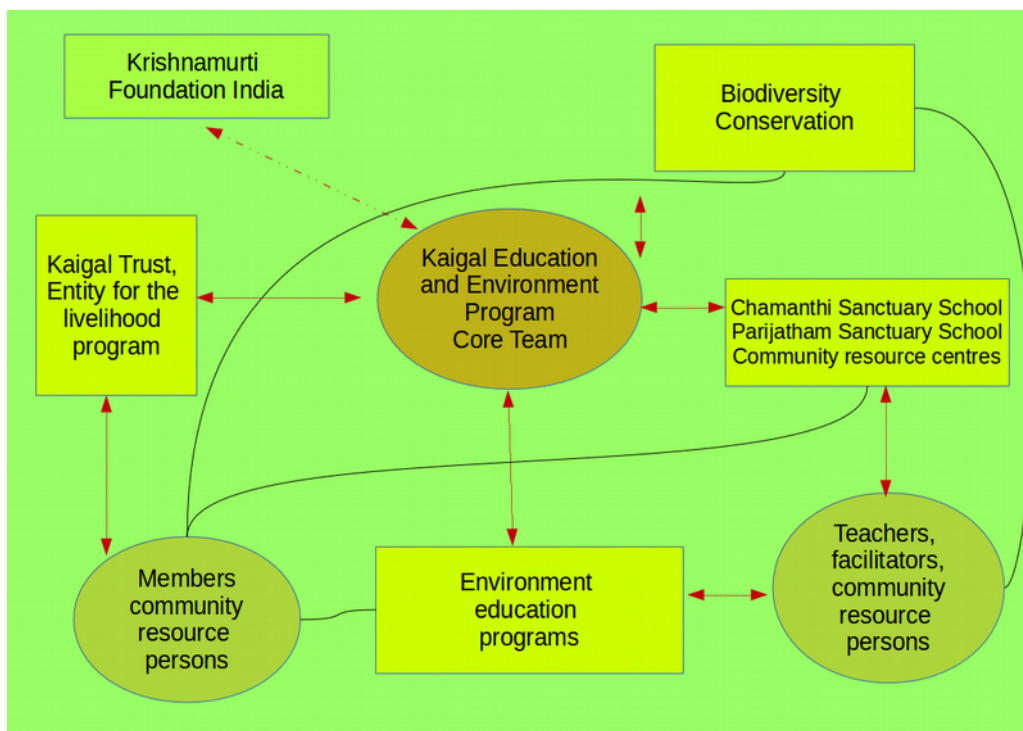
Communities

The communities here are marginalized mixed communities; many being scheduled castes/ tribes. The Yanadi tribal community is the predominant tribal group in this area and a majority of the community members are forest produce collectors, with a deep knowledge of the local biodiversity and traditional medicinal practices.

The Yanadi tribal community is the predominant tribal group in this area, and one of the major demographic focus groups of our intervention. Their main occupation is collection of a large variety of non-timber forest produce (NTFP) such as fruits, leaves, bark, tubers, honey, resins etc. from the reserve forests. They would supply these forest produce to the 'Girijana Corporation' or sell them in the local markets. Their knowledge of the forests – its ecology and biodiversity – is immense and invaluable. They are well known for their knowledge and use of traditional medicinal plants. Since the Yanadi community are traditional forest collectors and healers, work with this community impacts the well-being of the forests.

How is it managed

The Kaigal Education and Environment Program implemented by a core team of six members, comprises of teachers from The Valley School and the community members.



Community members were drawn from the local villages, these were young men and women who were literate, had completed high school and were looking for meaningful work to do. Jayapal, Krishnamurti, Pushpa and Sumithra are the core group at Kaigal who are involved in the day to day operations as well as community centred activities. Sudha, Premnath, Sriranjani and a group of scientists and educators from Bengaluru comprise the advisory group that works with this core group as well as the extended community. Participatory processes were embedded into the program right from the beginning, through collaborative knowledge building and peer learning and sharing.

Tribal households and rural communities were brought together, no easy task in our stratified society, to share knowledge and to work together. A core team joined the program and has remained with the program and has taken leadership in different aspects over the program. This team also created a network of people from different communities to participate in the different activities of the program.

The collaborative knowledge creation included the local communities – primarily elders from the local tribal communities. These elders interacted with external researchers who helped document the forest data. Local non-tribals were also participants in these processes as some of the communities we worked with mixed communities – communities that included tribals and caste people. The program also worked with academic institutions, research institutions focused on ecology, forestry, agriculture and indigenous knowledge systems, international development organizations, forest department and the Biodiversity Board at the state and national levels. The livelihood program also built linkages with different institutions and similar organizations. The schools were established after consultation with distinguished educationists and in close collaboration with The Valley School and Rishi Valley School. The curriculum development, teacher development and the regular operations of the school were modelled along the processes in KFI schools and emphasized learning in an atmosphere of freedom and respect.

Theory of Change

The underlying theory of change is that human communities are an interwoven part of the local ecology and sustainable interventions must evolve with and include the communities - whose rights and responsibility it becomes to protect and conserve the local ecology they are a part of.

“Yaanaai saami vandhuduchu. Naanga atha kumbuttu maraththu mela eeri ukkandukuttom. Rathiri poora ange irundhom. Kalaila anda saami kilambi poyiducchu” - This is how Nagamma describes her encounter with an elephant when she had gone into the forest to gather medicinal plants. When they go into the forests, often tribal people spend a few days at a stretch. During one such time, she saw an elephant. “The elephant god came. We saluted it, prayed to it and climbed onto a tree. The whole night we were on the tree. The next morning the elephant left”.

Her husband Chinnanna says “The forest had everything -there was so much honey, so many things we could collect.

It did not occur to us that we need anything else, we never looked for anything else or come away from the forests”.



Namma, a traditional healer teaching students

The reverence, the compassion and the relationship that we share with all life is exemplified in the words of this healer couple. And this relationship is what the program sought to influence and strengthen. The human species is not to be exceptionalized but validated and affirmed in relation to all the other participants in the ecosystem. The human community, along with the streams and the mountains and the trees and the birds form a composite whole, the well-being of each one impacting and being impacted by the composite whole.

Participatory development approaches have emphasized the role of communities and local stakeholders in the design and implementation of projects for their empowerment⁴. In the context of

4 http://siteresources.worldbank.org/INTEASTASIAPACIFIC/Resources/226262-1143156545724/Brief_ADB.pdf

communities embedded in and dependent on forest ecosystems, it has long been understood that building sustainable self-reliant communities requires balancing community needs with conservation approaches to restoring ecosystems. Traditional knowledge⁵ has also been recognized to be critical in the sustainable management of forests across cultures and geographies.

The Yanadis, the predominant tribal in this region are known to have a good knowledge of hunting and fishing practices, living close to forest areas and water bodies. Bioresources have formed a large part of their life and they know⁶ how to identify, locate, sustainably harvest these resources and also are able to use these in food and therapeutic areas. Usually collection of resources is a collective activity thus also transferring the traditional knowledge⁷. Over time, the traditional knowledge is disappearing⁸ faced with different development imperatives.

The program thus began working with communities to deepen their understanding of the forest, and harness their knowledge to support conservation activities. Schools were set up for the children from the tribal village to get a formal education and learn new skills. And a community based enterprise was set up to train local communities in different skills and also procure, value add and sell forest produce, in a sustainable manner. Forest conservation makes sustainable use and economic independence possible. Diversifying livelihood opportunities ensures that the environment is not degraded and leads to stable communities. Education opens up wider possibilities to the community and allows them to use the forest with care. Thus emerged an example for a model for sustainable development.

Conservation for and with the community

Forests and wilderness the world over are under great stress and saving and increasing biodiversity and forest cover is important in itself. Also, we must recognize that conserving the forest ecosystem and biodiversity is necessary for improving the living conditions of those economically dependent on the forest. We also recognized that it is possible to bring about conservation and regeneration of forest diversity only by the conscious sewing together of community collective memory and the knowledge of ecology and forest management practices. The conservation program was therefore focused on building alliances right from the beginning – with communities, institutions, with statutory bodies and the forest department.

5 John Parrotta, Youn Yeo-Chang, Leni D. Camacho. (2016) [Traditional knowledge for sustainable forest management and provision of ecosystem services](#). *International Journal of Biodiversity Science, Ecosystem Services & Management* 12:1-2, pages 1-4.

6 [http://www.ijhssi.org/papers/vol7\(1\)/Version-2/E0701023339.pdf](http://www.ijhssi.org/papers/vol7(1)/Version-2/E0701023339.pdf)

7 <https://portals.iucn.org/library/sites/library/files/documents/SPE-Pop-540-003.pdf>

8 Savithamma, N & Yugandhar, Pulicherla & Hari Babu, R & Siva Prasad, K. (2014). Validation of indigenous knowledge of Yanadi tribe and local villagers of Veyilingalakona - A sacred grove of Andhra Pradesh, India. *Journal of Pharmaceutical Sciences and Research*. 6. 382-388.

Nursery unlike any other

It was a quiet evening when Sudha was sitting at the Kaigal Centre, planning the work with Krishnamurti, the earliest field co-ordinator. Subbarayappa and Subbanna came from the Mugilupodalarevu village to meet them. Subbarayappa says over the impromptu conversation “See, I will tell you some important trees you must grow – I will bring the saplings from the forest. Jalari manu (this has fragrant flowers, good to grow), Bajji manga (good for lactating mothers and cattle), Karakkai, Thandra (both medicinal), Dhupam, Errapolichi....and he rattled on.” Krishnamurti jumped up at the idea and went with them into the forests through many nights and gathered saplings. Thus we added to our forest nursery.



Forest nursery at Kaigal

The story of Jalari manu reminds us of the enormity of the forests and fills us with humility. Krishnamurti went with the tribal elders to a hill which was the only place the Jalari grew and collected a root sucker, and we planted it behind the centre. Year after year we watched it grow, in anticipation. When buds appeared, it was a cause of celebration. It was not the Jalari that flowered though. Disappointed but determined, we grew it again in the nursery and carefully planted the sapling in the forest. The sapling died.

We are still trying to grow the Jalari, our reverence for the forest and its diversity having increased manifold.

The program worked on biodiversity conservation through three main approaches – *ex-situ* conservation, documentation of forest biodiversity, collaborative knowledge building around local biodiversity and environment education. To preserve and protect the forests, the program worked with the tribal communities to make trenches, planting of trees and dispersal of seeds. Many of these activities were conducted by the teachers from the schools or learning centres.



Nagamma, Jayapal showing children to make clay balls for seed dispersal

Ex-situ conservation

Working closely with the tribal elders, a database had been developed very early about the biodiversity in the region. Using this, threatened and endangered species were identified and the program went about creating a germ plasm bank, a nursery and also took up afforestation activities.

Seed bank

The Kaigal Centre houses a collection of germ plasm (seeds) of over 250 species of native flora in the form of seeds, tubers, suckers etc. Concerted effort has been put into regenerating medicinally important native species. These have been raised in the nursery and many



Krishnamurti with the tribal resource person on seed collection

have been replanted in the afforestation sites within the Centre where they have now become well established. Many of the established trees and shrubs in the reforested sites are now yielding fruits and seeds – the first step towards a sustainable germ-plasm conservation effort.

Forest nursery

The forest nursery focuses on research in regeneration techniques for a variety of native plants - raising healthy saplings for transplantation in their natural habitat. The nursery is about 6000 sq. ft. in area and has a 50% shade cover as well as tree cover for young seedlings and new seed beds. Nursery techniques have been established for approximately a hundred species of plants. At least two hundred species of plants have been raised at the nursery and used for afforestation efforts in the common land and tribal villages. Regeneration techniques and successful transplantation methods have been established for all the herbal plants and tree species that have been raised in the nursery. Many local people and students have been trained in both preservation of seeds and in raising and maintaining nurseries. Saplings are distributed to interested individuals and institutions. They have been widely used for land restoration, water conservation and afforestation work.

Herb garden of medicinal plants

Using local traditional lore as well as information obtained from institutions specializing in traditional medicines the herb garden was set up. This garden has been replicated in many places by the students from the Sanctuary Schools and the women and youth from the tribal communities. They have established herb gardens in their schools and homes, on private land and in tribal villages.

Documentation of traditional knowledge

Forest biodiversity

Phenology is the study of seasonal changes on fruiting and flowering in plants. This is important as the community needs to know the fruiting season of plants and is also necessary for seed collection. This information has been collected systematically from 2010 by local people under professional guidance for seventeen important tree species by periodically recording the changes in 170 individually marked plants. Conservation efforts have been actively supported by the tribal elders who have shared their traditional knowledge of the forests and the plants. This has been documented and many indigenous medicinal plants have been raised and multiplied using this information.

Documentation of sustainable harvesting practices

Field studies were conducted in 32 tribal villages to understand the sustainable harvesting practices followed by the people. The program recognized that protecting forests meant being sensitive to the livelihoods of the people dependent on the forests. This includes addressing concerns of forest sustainability as well as compensation at a fair price for the forest produce that reflected the true cost of the bio-resource, in environmental economics terms.



Interviewing communities at Nayanuru

Traditional forest collectors often harvested in ways that ensured sustainability of the forest

populations. However, with increasing pressure on forests due to commercial exploitation, bio-resources are now being harvested in ways that threaten the forests' sustainability and destroying tribal livelihoods. The livelihood program, described below is very closely linked to conservation concerns.

The objective of this documentation was to compile knowledge of how traditionally bioresources were harvested and the kinds of bioresources harvested. Such a community based data collection also had the salutary effect on the communities' sense of self-affirmation about their lives and knowledge. The primary knowledge so gathered can be then used to develop sustainable forest management practices and perhaps create interested communities who will take up forest based livelihoods in a sustainable manner.

Institutionalizing conservation within local governance institutions

Promoting sustainable forest management practices with equitable practices for sharing with communities is now being recognized as an important national priority, with its articulation under the National Biodiversity Act, 2002. The Biodiversity Boards have been establishing the Biodiversity Management Committees (BMC) all over the country to bring about management of bio-resources at the Panchayat level.



A Yanadi NTFP collector interacting with APSBB Member Secretary

When the BMCs understand their roles and functions effectively they will have the capacity to regulate the access to the different bio-resources within their boundaries and also fix fair prices for these resources which will be collected by the BMC at the local level. The BMCs thus will work at the grass roots to effectively fulfil and implement the Biological Diversity Act of 2002. The Kaigal program supported this key initiative of the NBA by setting up BMCs as well as functioning as Technical Resource Group for BMCs.

Building community knowledge based databases

In collaboration with the National Biodiversity Authority, the program helped build a “Peoples’ Biodiversity Register”(PBR)⁹ at the panchayat level and a “Tradeable Resources Register” at the District Levels . These are primary data bases developed all over the country and are aimed at protecting the local bioresources as well as the communities that depend on them and are legal documents.

They contain detailed information on Natural Resources, Populations, Existing Traditional Knowledge systems, Knowledge holders, Farmers, Healers and their practices. These databases include updated maps of local land use as well as biodiversity data and have been developed through extensive ground level verification. This exercise has brought together different stakeholders – the local community, the forest department, local educational insitutions, the local government bodies, the statutory bodies established under the National Biodiversity Act and the experts from the program research team. This process of knowledge creation also helped maintain the indigenous knowledge

Collaborative knowledge building

- Identification of medicinal plants and commercially important plants
- Creating a network of knowledge holders
- Connecting with community based organizations
- Validating community knowledge of local biodiversity

9 https://link.springer.com/chapter/10.1007/978-1-4020-8504-8_17

system of the local communities besides training youth and teachers in these communities in scientific methods of data collection and research. Field studies conducted for developing the People's Biodiversity Register for M. Kothur, Vengamvaripalli and Kangundi BMCs and Tradable Resources information for Chittoor and Ananthapuram Districts gave us the necessary opportunity for identifying new resources. The field work gave immense opportunities and linkages to very knowledgeable and intelligent people and interesting information.

Education to build and bridge communities

Contextually relevant education for tribal communities

Working with the children meant committing to a sustained relationship with the communities, with them and through them. The tribal children seemed very special – living and working with nature at such close quarters seemed to imbue them with a deep sense of dignity and a calm that one does not come across very easily. What kind of an education would make sense in this context? Will it affirm their identity and their culture or will it make them disenfranchised within their world? How will we find an adult who will work with sensitivity to their context? These were questions that were in the forefront even as efforts began to set up non-formal learning centres in five villages. These centres were modelled along the principles of the Krishnamurti Schools and the teachers were trained in the same ethos as that of other Krishnamurti Schools – one of freedom where learning happens without hierarchies. It was also clear from the get go that for the school to be sustainable the community needed to own the school and support the operations.

The tribal communities were knowledge holders and possessed a large amount of indigenous knowledge about the local forests and intuitively understood the connection between the local ecology and their life. However, with the mainstreaming of tribal communities – through education, development programs and more recently, the media – there was a perceived need to learn to read and write and get education.

The three important challenges for the schools were:

- Developing a responsive, relevant, engaging curriculum that valued their knowledge, lived experiences and traditional skills
- Working with the community to help them understand the processes and demands of formal schooling
- Designing processes of teacher development to help them in their role as facilitators for learning where each member can grow and learn, recognizing that the development of the teachers is in itself an objective of the schools



Teachers getting trained in The Valley School

Supported by the community, who were keen that their children be educated, two primary schools were set up and registered under the RTE Act 2009 in the villages of Mugilupodalarevu and Kalligutta villages. The community made available the land for the school and the school infrastructure was developed with donations from different donors.

The vision of the Sanctuary Schools

1. Local knowledge must be integrated within the school curriculum; the curriculum must allow for the school to influence the community discourse on education. One of the core activities of the school to be Forest Study where the village elders would interact with the students and teachers and take them into the forests to share their knowledge.



Nagamma taking the students into the forest

2. Teachers must be empathetic adults who are able to accept the children from these communities without any prejudice and treat them with respect and kindness. Having teachers from the local communities (non-tribal) would in and of itself create an environment of bringing together different communities.
3. Tribal communities are multi-lingual, and the instruction must be in the child's first language; English may be introduced as a second language for older students
4. Spaces for play, community-based work, creative pursuits, silence, reflection and introspection for students and teachers alike must be available.
5. Providing spaces for play, community-based work, creative pursuits, silence, reflection and introspection for students and teachers alike.
6. Autonomy and flexibility must be available to the teacher in order to be creative and to facilitate explorations with students
7. Introduction to skill based work – like stitching, macrame – connecting the school with a local women's enterprise must be a part of the curriculum enabling students and teachers to see the value of meaningful work



Students working during a review

The schools have introduced the students to a wide variety of activities, from sports to creative expressions like painting, pottery and music, hands-on craft skills in addition to the age-appropriate reading and writing skills expected. Structured experiences of participating in events with the world outside their village – through academics, art and sports has been encouraged for the students to see and interact with the world outside.



Chandrakala showing her pottery creation at the Art Convention in The Valley School

This is our school

With the emphasis on universalization of primary education, there was a massive enrolment drive by the government to enrol the students from these villages into the government primary schools. The community owned up to their own school in their midst and communicated with the education administration that they would prefer that their children complete their basic education in their tribal school. “These schools have shown us the way to Baireddipalli (the nearest and biggest town); we will not leave this school. We will send our children to the government schools after they finish their schooling here”, Duggeppa, the elder from the Kalligutta village represented to the Mandal Education Officer.

“When the schools started, the children went and hid behind the bushes”, reminisces Krishnamurti, the first field co-ordinator of the program. “Now, the moment they see a teacher, they come running to the school”. “There is courage now in the children and us as adults. We are able to stand up and speak for ourselves, there is a confidence that we can do something”, says Subbarayappa, who was one of the architects of the school in the Mugilupodalarevu village.

Integrating conservation into the curriculum

The schools have also been engaging with the community on raising issues of environment conservation, water, fuel and waste management. The schools were enrolled as part of The Eco-schools program, which is an international award program of the Foundation for Environmental Education (FEE) headquartered in Copenhagen that guides schools to address a variety of environmental themes providing a simple framework to make sustainability an integral part of school life. The environmental themes taken up by the schools were Biodiversity, Energy, Waste Management, Water and Healthy Living.



Community exhibition of up-scaled cloth



Jayapal receiving the Ecoschools Award

The impact of the eco-schools program goes far beyond the project period – in terms of the curriculum that we have been able to demonstrate – and has helped integrate ecological concerns into core school curricula, connected the community and the schools on issues of environmental concern. It has also made possible the professional and personal growth of the teachers and enhanced the sensitivity of children to local environment care.

School as a community centre

During conversations with the students, we attempted to find out how a non-hierarchical classroom and an empathetic teacher can help alter the psychosocial context of first generation school going children from a tribal community. The schools have delivered on one important dimension – of changing the discourse on education within the community. Several of the students interviewed spoke of an aspiration linked to the education received in school – some of them wanted to change



Students interacting with the community during the monthly meeting

their village, some wanted to become good teachers and yet others spoke of good jobs. One of them said she wanted to contribute to society's well-being and another wanted to be a forest officer.

All the students reported discussing about the school with their parents, an act that could produce change of a more lasting kind. It suggests the child finds the school important enough to speak about and the school becomes relevant to the community.

In Chamanthi school, Subbarayappa walks with a smile into the room, contentedly sitting down and reading with the other members in the room. It is about 8 in the

evening, on a moonlit night, in the one-room school in the tribal village of Mugilupodalarevu, where the teacher is now addressing a class quite different from what he teaches during the day. "If I read, others may follow me and they will also learn", says Subbarayappa, even as he prepares for a video interview of the ways of life as a tribal forest collector. Equally riveting is the scene in Kalligutta, another tribal village 17 km away, where tribal women come to the Parijatham Sanctuary School every day to learn to read and write, taught by one of their own children. Rajamma, a Yanadi tribal woman says with pride "I will sit outside my house and read with the street light – even if you have no school. You please continue to teach us, we will come".

Environment Education programs

The environment education program (EEP) began with the objective of sharing with schools and students, the possibilities, challenges and strategies for a sustainable and ecologically responsible way of life. Bringing communities together, introducing students to different knowledge systems, creating new contexts for learning, including the redefining of the teacher and allowing students to simply experience nature are the key ideas behind this program. The program provides an opportunity for individuals to live close to nature in simple living conditions; to work hands-on for different activities, re-connect with the environment and is an attempt to understand our relationship with the natural world directly.

The programs provides an opportunity for individuals to live close to nature in simple living conditions; to re-connect with the environment and attempt to understand our relationship with the natural world directly. The activities and experiences offer young minds an opportunity to observe and appreciate the beauty and order that exists in the natural world and are designed to create sensitivity, respect and a sense of wonder toward all life forms.

The programs are of different durations and depend on the nature of the group - students, interns or teachers. The content of the program is dependent on the needs of the group. The sanctuary school teachers and the livelihood program members conduct these programs. Activities include long forest walks observing nature quietly, participation in forest conservation work (building rain water trenches, working in the forest nursery, afforestation etc.). They are also involved in biodiversity studies and interact with the tribal communities and with the Sanctuary Schools; visit farms and work with the farmers and learn local crafts.



Kothur village sarpanch and healer explaining about lake restoration

Participants, especially the students from urban schools, become more sensitive to ecosystems, more aware and accepting of different life forms and get over their fear of wild life. This has allowed them to experience the natural world and the beauty of nature. They realize that the threat to forests and natural ecosystems is very real and that every individual should be actively involved in conservation. The program involves substantial interaction with the adults in the villages as well as the children in the Sanctuary schools. This has significantly helped in breaking down class barriers, in generating awareness and acceptance of differing lifestyles and learning to live frugally with minimal resources.



Knowledge documentation from local healer, Hyder Pasha, specializing in healing animals



Working in the farm tying beans fences

Livelihood program

Livelihoods for stable communities

Integrating livelihoods for rural communities needs to be brought back into the development models being imagined in many countries. In developing countries, especially, contextually relevant skills for creating and sustaining rural livelihoods is necessary for supporting conservation¹⁰. India is among the richest biodiversity regions in the world given the great diversity in biogeographical regions across the country. Through the history of this ancient civilization, peoples'

¹⁰ https://link.springer.com/chapter/10.1007/978-1-4020-8504-8_17

lives have been closely linked to their local biodiversity resulting in a rich variety of livelihoods. These include traditional practices in craft and art forms, farming and animal husbandry, fishing, forest based livelihoods, folk healing, medicinal practices and many more. In spite of major changes over the last 300 years in land use patterns and land ownership rights and the advent of industrialization and rapid economic growth during the last century, a large number of people continue to pursue their traditional livelihoods.

Closely linked to the traditional livelihood patterns are the traditional practices of conservation and an intimate understanding of the local ecology. Many traditional practices of NTFP collection have in-built mechanisms of conservation of the resource. However, with the rapid depletion of forests, fertile farm lands, wet lands, seasonal rivers and their diverse life forms, this symbiotic relationship between ecosystems and livelihoods is being steadily destroyed and also disappearing are the associated knowledge systems among the people. Further, low remuneration for raw NTFP means more harvesting. They need to collect large quantities of produce to be able to earn enough to support their families. Thus a vicious cycle of low market value for the raw goods and excessive harvesting to earn a better income leads to over exploitation and depletion of the natural bio-resources in this region. Degradation of the forest causes greater exploitation and that in turn results in faster degradation. This vicious cycle destroys the forest and the livelihood of the community and this leads to migration in search of livelihood – something that is culturally and economically disastrous.

Kalimbi showed the way!

There were 20 kg in the sack of a mix of wild fruits collected from the forest. The brief had been to bring all edible fruits and there they were. The team at Kaigal steamed, pitted, crushed and filtered and watched the mixture boil over a wooden stove for 5 hours. This was the first Kalimbi jam made in Kaigal. This was the first of the



Kalimbi fruit

several products that would start a new enterprise. The question formed in the minds of the people there – can the local and forest produce be converted into products that would fetch more value than the raw produce the communities take to market? Can it increase the shelf life of the produce? Will a higher return on their products incentivise the communities to conserve and harvest sustainably?

There was a need for a model that would demonstrate how a sustainable use of the forest could provide other economic opportunities to the community that would allow them to retain their cultural identity while being a part of the larger community.

Thus the idea of a Self Help Group was formed.

The objective of this enterprise is to develop and nurture a community centred approach to biodiversity conservation through the development of sustainable livelihoods and empowerment of women and youth. The program has been working with young adults and women from the surrounding villages in creating new occupations and in making existing livelihoods more viable. Working with the local communities, the major NTFP species were identified, local uses were documented and products were made through simple value addition.



Presentation about the Kaigal Trust to FRLHT

The first woman joined the Kaigal team to explore livelihood creation in 2009, a young girl from the Kaigal village who had been inspired by the outreach program conducted earlier during the forest conservation program. In 2010, the Kaigal Trust Self Help Group was formed to explore ways by which the local and forest produce could be processed and taken to market. The Kaigal Trust Self Help Group (KTSHG) was a small initiative with about 4 or 5 people as the main group networking with a set of ~ 25 Yanadhi collectors who supplied the raw materials needed for KTSHG in its initial stages.

Today the Kaigal Trust (re-christened from the Kaigal Trust Self Help Group) has a turnover of over Rs 25 lakhs working with a group of 12 women and men – from tribal and rural communities.

In addition to making and selling products, the program has helped in the formation and capacity building of a community based enterprise of women and youth from tribal and marginalized farming communities. They acquire bio-resources and farm resources at a fair price and use simple value addition techniques and bring these products to end consumers. Local women and youth are trained and employed in this enterprise, organized along the principles of a local self help group.



A tribal collector bringing in jamun fruits to the enterprise



Ademma, a tribal woman and also a teacher in our schools making jamun syrup

Community skill building

Women and young adults have been taught various method of adding value to forest products using pickling and preservation processes developed for abundantly available local produce. Women and older girls have been taught embroidery, tailoring and stitching. In addition they have learnt weaving, macramé, basket weaving and pottery. They use this knowledge to produce a variety of hand embroidered, tailored material for sale. Training has been provided in growing of saplings, medicinal plants and native fruits, vegetables and flowering plants.

The members of the Kaigal Trust are trained in packing and marketing, stock keeping, accounts and sales reporting. The Kaigal Trust supports skills building in the schools, and also interacts with education programs. The members proudly declare that they feel good to be running their own business.



Planning and making kalimbi jam



Women from Kalligutta being trained

Model of Access Benefit Sharing

The Kaigal Trust sources its raw materials from different panchayats. And under the new Biodiversity Act, has entered into an agreement with the APSBB for an access benefit sharing for bioresources collected from forest land. The community enterprise, where local women and youth participate and work with communities for accessing and value addition of bioresources to bring to markets acts as a key community space for bringing together people as well as for skill building¹¹. The local enterprise has been able to demonstrate an access benefit sharing mechanism which can potentially be a model for similar community led enterprises dependent on local and forest bioresources.

What has the program demonstrated

- Conservation through community mobilisation has been demonstrated as an effective method – through the multiple interventions. The program activities have been implemented in an organic way which allows teacher to be engaged in conservation or biodiversity documentation; or the livelihood enterprise members to support schools. The integration is not merely a tactical requirement but reflective of the underlying philosophy. Impact has been observed directly through sales of products or students but mostly in an embedded way in the ways communities respond to programs and activities.
- Teachers have become change agents themselves; many teachers acknowledge the difference the school has made to their lives. Some of them now have moved on to support the livelihood program. Two of the students who have studied in our centres as children have come back as teaching staff in the schools. The age at marriage for girl students has been continuously increasing in the tribal communities. The girls from the communities move back to the villages after their marriage as they see the value of the school education for their own children. It seems that a participatory approach to educational design that includes teachers, students and the local community could lead to better educational outcomes in terms of retention and student engagement. A sustained relationship that begins

11 Community Empowerment through Sustainable Livelihood Generation Using Diverse Traditional Knowledge Systems, Detailed Report prepared by the KFI for the Project funded under GEF-UNDP-SGP

with the school enables evolution of the into a resource institution that can take on a more integrated approach to development, education and skill building in a tribal community.

- Communities are becoming more aware of the links between conservation and livelihood of local communities, particularly tribal, farming and other marginalised populations; this is particularly relevant in the face of loss of traditional knowledge. Participatory processes and local leadership and autonomy is key to collective knowledge building. These processes are both the means and ends for knowledge creation.
- Trust has been built within the community which allows them to stand up in favour of the collective and the community enterprise. Empathetic management approaches that are affirmative of the ways of life, language and knowledge have been critical to building the trust of the community. Learning and sharing needs to be a two-way process to ensure the validation of traditional knowledge systems, while at the same time learning from new approaches and methods. Continuous and persistent capacity building is essential for collaborative knowledge processes to become effective. Conscious efforts to bring together institutions and people from different knowledge systems have helped communities come together and learn.
- The learning from this program could inform the way intersections of knowledge systems can be managed with dignity and in an empowering way with principles of ecological and social justice.

1. Forest cover improved in the area where the Centre operates; over 14000 hectares of ecosystem have been impacted
2. Over 60 villages touched by the different interventions; 300 tribal households impacted
All children between 3 and 12 years of age in the two villages are now attending schools. Children in the tribal schools are regular school-goers and many go on to high school. About 30 students have completed their Class 10 exam; about 10 of them are in college
3. The livelihood program now has a turnover of Rs 26 lakhs and 11 members work there from the tribal and rural communities; perhaps the first community enterprise to demonstrate an access benefit sharing for biodiversity conservation

The Kaigal program has emerged as a resource organization for the local biodiversity authority building expertise in biodiversity management at the local panchayat level through the formation of Biodiversity Management Committees^{*4}

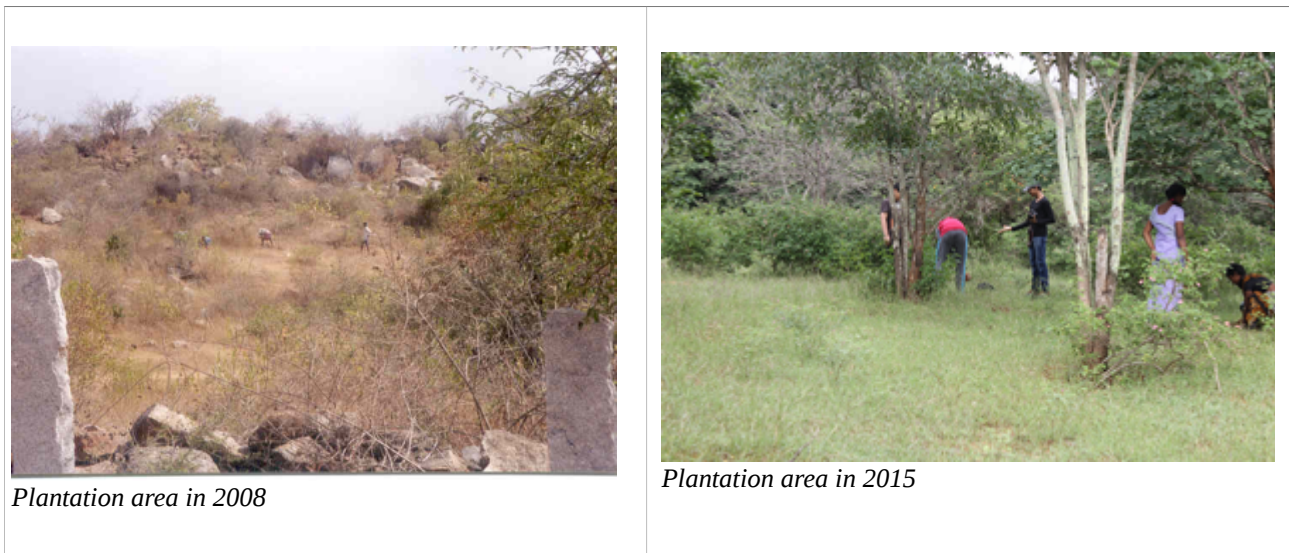
What has changed

The program started with a very immediate objective of protecting the land – planting trees, minimizing grazing and also reduce the impact of tourism - the Kaigal Waterfalls is a major tourist attraction here. For the team that conceptualized this program, this was just a peg to attach the program. The change was more subtle and more profound – altering the individual and the community – affirming and changing their relationship and position with the local ecology.

It rains more in Kaigal Valley “They say it rains more now in Kaigal because there are more trees now in Kaigal” Jayapalappa proudly beams as he looks at the slopes from near the kitchen in the Kaigal Conservation Centre. Afforested over a decade of work with students and communities, the Centre is now unrecognizable from the barren landscape it was when the first group of students arrived here. Left to do so forests have simply grown back - it is that simple.

Jayapalappa should know – he walked the forests over months to document phenology data from

over 13 species of trees. The Forest Department takes saplings from the nursery maintained at the Kaigal Centre. Jayapal started as a teenager, who had completed his Class 12 to “do any job”. Over the years, he completed his undergraduate and masters degrees, teacher training and oversees the running of the two schools besides anchoring the Environment Education Programs. He has learnt methods of field work, handles snakes and can conduct field based programs for students. Deeply passionate about education, he is at his best with students and imagines that the Sanctuary schools will be a place where the students learn about the world around them and can negotiate their rightful place in it. He rushes off saying “I will go find a snake now” for the students who are arriving from Bengaluru.



Yes, in one simple word **Raghupathi** talks about how life changed for him when he came back to his village from a granite polishing firm. Raghu was a shy student in the Mugilupodalarevu learning centre till he was about 13 but refused to go to the high school. His hands could create magic – with the nursery, with the embroidery thread, with the macramé, with clay and with a sketching pencil. He worked with the livelihood program when it first began in 2008, bottling honey and tending to the nursery. One day, he ran away to Ahmedabad to start work in a granite polishing firm. But just as suddenly, he came back to the Centre, to the same nursery and the forests. Why he went away he is not able to explain but is very clear, he is here to stay now. He now runs the environment education programs along with Jayapal, teaching children about maintaining a forest nursery and taking them into the forests.

I won’t go anywhere and work, says **Sumithra** whose strength belies her tiny physique. “What kind of school is this I thought when I first joined”, she laughs talking about her entry into the program as a teacher in the Mugilupodalarevu learning centre. There has been no looking back since then. She was a teacher, and helped set up centres and train teachers in other villages also. As the first member of the livelihood program, she learnt all the skills – tailoring, macramé, honey processing or pickling, packing, selling and accounting and now manages the entire operation. Her mother was dying from cancer, but Sumithra was out with the team filtering and gathering jaggery fresh without any chemical additives. “I must be there for the filtration and gathering of the jaggery – there should be no mud” she explains. Sumithra has built a team of women and men from the communities who take pride in their own work. When I interviewed them for this case study, all of them said one thing – about how this has changed something inside for them. All of them spoke about what they have learnt and who they are.

You send me anywhere I can manage, says Pushpa, a single mother, who has raised her girl along with her own learning path. “I was an Inter-pass” now I have completed by degree, even as she now is learning book keeping on the computer. The Kaigal Trust employs 12 people – young men and women from the local communities – who walk into work every day to run their own business. And it is perhaps the first community led enterprise to sign an Access Benefit Sharing agreement with the Andhra Pradesh State Biodiversity Board.

What have I not learnt? Krishnamurti almost challenges me when I asked him about his journey with the Kaigal Education program as a young co-ordinator to being the sarpanch of the M Kothur village. “All that I have learnt is from working here – how to do any job properly I learnt. I was afraid to talk, meet people, when we started this place was a tourist place, some not good things were happening. From there we built here.” Krishnamurti worked fulltime with the program until about 2010 when he was elected as a sarpanch but he continues to work with the activities in direct and indirect manner. “When the students come for the environment education programs, it makes a difference to the communities. They are happy to see the students coming and working here, happy to teach them. We are known to do good work”, he proudly declares to me.

Community owns up the enterprise. “After I started supplying to the Kaigal Trust, I am able to save money, I have bought goats – my children are studying well”, --- from Nadamanthram village, almost 40 km away from Kaigal. “You are paying us well, in time and properly. This helps, if you collect regularly, we can go to the forests regularly, that is what we know how to do. Why don’t you also teach our women some skills and set up a centre in the village”, he asked me. Whether it is the tribal selling honey or the oil chakki owner in Venkatagiri Kota or the farmer in Theertha, what is very clear is that the community is benefiting from selling their products to the Kaigal Trust. “I give it to Kaigal Trust at very low margin – I want to be part of the work that supports and keeps our farmers here. Before you started buying, I was only doing small jobs. Now you buy regularly, my oil chakki runs regularly. My shop has grown, what you are doing is helping the farmers”. Balaji the rice supplier from Theertham echoes similar ideas.

I enjoy my college Saritha smiles shyly as she came to meet me at the Kalligutta school when I had gone there. She finished her class 10 exam through the NIOS securing over 60% and decided to join a program that will allow her to get a nursing degree. **I will teach them**, says Chandrakala when we asked her if she would conduct the community resource centre in Kalligutta. A student with the Kalligutta school since the beginning she has completed her Class 12 exams with the schools, through the NIOS and is now enrolled in a degree program. She hopes to become a teacher and wonders how she will help her village come together to work towards a healthier, peaceful place.