SGP The GEF Small Grants Programme Sri Lanka 25 YEARS

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COMMUNITIES IN ACTION

ENVIRONMENT CONSERVATION THROUGH PEOPLE'S EFFORTS, SRI LANKA

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The case studies featured in this 25 year publication are a small representation of the projects implemented through the GEF SGP programme in Sri Lanka. These initiatives have attempted, through various innovative ways, to conserve and restore the environment while enhancing people's well-being and livelihoods.

We would like to extend our sincere thanks to Dr. Keerthi Mohotti, Chairman and the members of the GEF-SGP National Steering Committee of Sri Lanka for their invaluable advice, guidance and support rendered over the years. We would also like to thank the members GEF-SGP Technical Advisory Group who have made valuable contributions in the field through their guidance and support, for ensuring the success of the GEF SGP projects. We thank the Ministry of Mahaweli Development and Environment for the cooperation extended to the GEF SGP programme in Sri Lanka.

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Last but not the least, we would like to extend our thanks to the GEF SGP Grantee Partners (NGOs and CBOs) that have implemented numerous projects in various parts of Sri Lanka and the communities that have participated in the GEF SGP projects. We appreciate the efforts and attempts of the Grantee Partners in highlighting existing environmental and social challenges and offering solutions to make a positive change in the lives of various communities and conserve the environment. GEF SGP Sri Lanka continues to improve through experience and lessons learnt while serving the communities of Sri Lanka.

Dinali Jayasinghe
National Coordinator
Global Environment Facility - Small Grants Programme (GEF-SGP)
Sri Lanka

INTRODUCTION

Background

SGP Sri Lanka has over the years invested in community conservation of natural resources and ecosystems to achieve sustainable development. Emphasizing people's participation in environment protection in an integrated and multidisciplinary manner, has brought about results which have affected the lives and livelihoods of many rural communities. SGP works on the premise that maintaining ecosystems ensures ecosystem services are safeguarded which will in turn ensure a flow of benefits for the people. It therefore underlines the link between conservation and human well-being.

Building awareness and capacities of partner organizations on the GEF focal areas, sharing information, in particular on biodiversity conservation, climate change mitigation and adaptation, land degradation and global dialogues on sustainable development, has been a main foci of the program. Applying this knowledge to project goals and objectives and addressing them through activity implementation is the approach SGP takes in working with communities.

The Global Environment Facility – GEF

The Global Environment Facility was established in 1992, the year of the Rio Earth Summit, as a program to assist in the protection of the global environment and to support governments to 'tackle the planet's most pressing environmental problems'. The GEF would provide grants and funding to transform a project with national benefits to achieve global environmental benefits adapting different methodologies in activity implementation.

The Small Grants Programme (SGP) of the GEF which also initiated its work in 1992 was established to support on-the-ground conservation actions of communities and civil society groups with access to GEF financial resources. Working in 125 countries the Small Grants Program has up to date funded over 20,000 community initiatives that have protected the environment, created sustainable livelihoods and fostered people's empowerment. Today in 2017 it is affirming 25 years of conservation work and is recognized as a global platform for effective delivery of community initiatives which reaches marginalized and vulnerable people who otherwise have limited access to grant funding.

SGP funds "small grants" up to a maximum of US$50,000. In addition, "strategic projects" 'provides funds up to a maximum of US$150,000. These "larger" small projects allow for scaling up and cover a large number of communities within a critical landscape or seascape. The evolutionary developments further signify the fact that SGP has been effective in supporting community led participatory approaches' of 'local actions generating global benefits' in environment protection and conservation.

The GEF Small Grants Programme (GEF/SGP) Sri Lanka

Established in 1994	Main Focal Areas
The Operational Phases	Bio Diversity
Pilot Phase : 1994 – 1996	Climate Change
Operational Phase I : 1997 – 1999	Land Degradation
Operational Phase II : 2000 – 2004	Chemicals
Operational Phase III : 2005 – 2006	International Waters
Operational Phase IV : 2007 – 2010	
Operational Phase V : 2010 – 2014	Total grant amount received – US$ 8,632,909
Operational Phase VI : 2017 – 2020	Total number of projects 396 up to 2015

This publication covers 25 selected case documentations of a series of projects that expound the five GEF focal areas SGP Sri Lanka has been working on in the past operational phases. They are an illustration of the commitment of the programme to build up community level organizations, their awareness and capacities to engage in innovative methods of environment conservation and livelihood means.

True to the words that globally SGP is the 'public face' of GEF, the Sri Lanka programme has reached marginalized communities and facilitated access of grant financing to these groups. It has provided for women's participation and gender empowerment as well as support for indigenous peoples, for youth and for people with special needs. The continued strengthening of project design, monitoring with technical guidance, reporting methods and knowledge management has led to more robust projects on the ground and increased confidence of communities, local government institutions and other sectors. The qualitative and quantitative assessments embodied in the case studies offer proof of people-based projects with enhanced environmental values, economic returns, and social well-being of rural communities.

It has to be stated however that capacity building is a continuous process and community-based organizations labor under significant difficulties, including 'lack of adaptive management capabilities, limited capacities for innovation, and weak linkages with other organizations for collective action across landscapes and sectors and lack of access to resources'. These challenges are highlighted to urge all stakeholders to expand capacities and join in a collective search for solutions, with possible mitigating actions, so that GEF SGP continues to develop and mature as an effective mechanism for community conservation of natural resources as well as an efficient grants delivery instrument that can create further impact at the global level through local action.

As demonstrated SGP Sri Lanka has generated a high degree of awareness and interest in global environment concerns through community action. It will be a continuing process with grant projects specifically targeting vulnerable communities while influencing others such as donors, institutions and larger projects to adopt the procedures and mechanism of the SGP.

FOREWORD

Global environmental degradation is threatening the survival of all species on earth. Going forward, we have no alternate course of action, but to conserve critically important ecosystems and biodiversity, land and soil, air and water, and address climate change issues. We need to find a balance between human wellbeing and planetary health.

For centuries, local communities have played a key role as stewards of natural resources and ecosystems on which they rely on. Now, more than ever, the participation and cooperation of communities is essential to restore and conserve our natural environment.

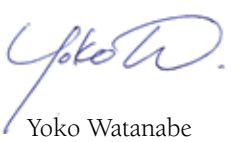
The GEF Small Grants Programme (SGP), implemented by United Nations Development Programme, has been supporting community efforts in addressing global environmental issues for the past 25 years, by promoting solutions that take into account social, economic and community values, and ensure community ownership of the initiatives. As a result, the cumulative impact of the Programme goes well beyond the participating communities, and contribute to the development of policies and good practices across the globe.

In this publication, we feature twenty-five initiatives supported by the SGP in Sri Lanka over the last 10 years. These case studies also demonstrate that long term commitment is vital when engaged in restoring and conserving ecosystems with local communities.

One of the cases featured in this publication - a project that has been implemented in Narangala community - demonstrates the power of local action in conserving sensitive ecosystem with high biodiversity and important watershed. The initiative resulted in positive impacts not only to the participating villagers, but also to the livelihoods of downstream communities. Through this project, the community also worked in partnership with relevant government departments and local authorities that eventually declared over 240 hectares of land as a wildlife reserve with important watershed for the communities.

We hope this publication provides with powerful and useful examples on the fundamental role that local communities, including indigenous peoples play in environmental conservation.

Jorn Sorensen
County Director
UNDP Sri Lanka



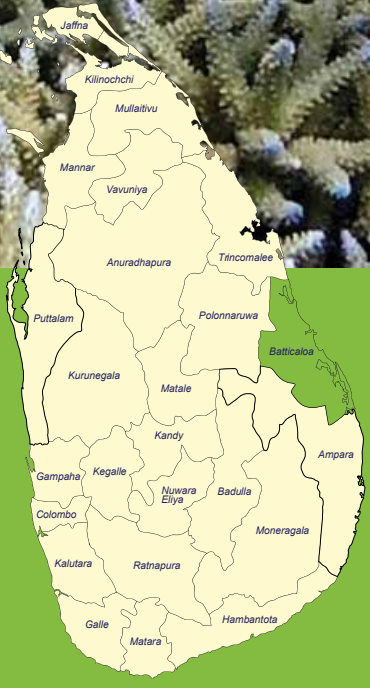
Yoko Watanabe
Global Manager
GEF/Small Grants Programme

CONTENTS

ABBREVIATIONS & ACRONYMS

A - Ampere
ac. – Acres
AFB- Adaptation Fund Board
AirMAC- Air Resource Management Centre
BOD- Biochemical Oxygen Demand
CBA- Community Based Adaptation
CBO- Community Based Organization
CDC- Community Development Centre
CEJ- Centre for Environmental Justice
CFL - Compact Fluorescent Lamp
CKDue - Chronic Kidney Disease of uncertain etiology
CO_2- Carbon dioxide
COD- Chemical Oxygen Demand
COP7- 7th Conference of Parties
CSE- Centre for Science and Environment, India
CSO- Civil Society Organization
DC - Direct Current
DFO -District Forest Officer
DOA- Department of Agriculture
DS- Divisional Secretariat
DWC- Department of Wildlife Conservation
EPSKMS- Ekabadda Praja Sanwardana Kantha Maha Sangamaya
EV- Electric Vehicle
FD- Forest Department
FFCTSAR -Farmer Federation for Conservation of Traditional Seeds and Agriculture Resources
FO- Farmer Organization
FSP- Full Size Project
ft- feet
GEF- Global Environment Facility
GN- Grama Niladhari
GPS- Global Positioning System
ha- hectare
HC - High Court
HEDO - Human and Environment Development Organization
HS - Harmonized Commodity Description and Coding Systems
IJF - Isuru Jeewithodaya Foundation
IPEN- Instituto Peruano de Energía Nuclear
INGO- International Non-Governmental Organization
IOM – International Organization for Migration
JVM- Jaiva Vividathwa Mithuro
kg- kilogram
km- kilometer
kW - Kilowatt

LEVA- Lanka Electric Vehicles Association
LKR- Sri Lankan Rupee
Ltd - Limited
m^2- Square Metre
MKGP- Moragahakanda-Kalu Ganga Project
mm - millimeters
MOH- Medical Officers of Health
MSF- Mihimaw Science Foundation
NBRO- National Building Research Organization
NCF - Narangala Conservation Foundation
NCP- North Central Province
NEUF - National Ethnic Unity Foundation
NGO- Non-Governmental Organization
NGSMS- Naula Grameeya Sanwardana Maha Sangamaya
NIE- National Institute of Education
NIMH- National Institute of Mental Health
NRMC - Natural Resource Management Center
NSRC- Neo Synthesis Research Centre
NVDS - Naula Village Development Society
NWS&DB -National Water Supply and Drainage Board
OARM - Organization for Aquatic Resource Management
PCB- Polychlorinated Bi Phenyl
PGRC- Plant Genetic Resources Center
pH- potential of hydrogen
PHK- Podujana Himikam Kamituwa
REN- Rural Enterprise Network
RFO - Regional Forest Officer
POP - Persistent Organic Pollutant
ppm - parts per million
PRA- Participatory Rural Appraisal
Pvt - Private
RSS- Ribbed Smoked Sheets
SAICM -Strategic Approach to International Chemical Management
SALT- Sloping Agricultural Land Technology
SGP- Small Grants Programme
SKEMCDF- Soba Kantha Environment Management and Community Development Foundation
SLS - Sri Lanka Standards Institute
TRP- Transition Recovery Program
US$- United States Dollar
UN - United Nations
UNDP – United Nations Development Programme
UNFCCC- United Nations Framework Convention on Climate Change
V - Volt
VET- Vehicle Emission Testing
VRA- Vulnerability Reduction Assessment
WHO - World Health Organisation
WRCT -Wildlife Research and Conservation Trust



Rehabilitation of a Coral Reef Ecosystem in Pasikudah Bay

Project No:	SRL/SGP/OP5/STAR/IW/2013/04
Grantee:	Wildlife Research and Conservation Trust (WRCT)
Location:	Passikudah Bay, Batticaloa District
SGP Contribution:	US$ 46,598.00
In Kind Co-Financing:	US$ 78,065.00
Project Period:	19 months (12/2013 - 07/2015)
Number of People Served:	48 families
Focal Area:	International Waters

Background

The relatively calm Pasikudah Bay is located 28 km north of Batticaloa town in the Eastern Province of Sri Lanka. The area is a popular tourist destination, especially during the non-monsoonal period from April to November, when the sea is calm and the water is exceptionally clear. Visitors can observe the reef and fish in the lagoon from the glass bottom boats operated by the fishers. Around 3,500 people reside in this area and their main occupations are fishing and farming. Approximately 200 fishermen are involved in fishing activities within the bay and the lagoon area.

Passikudah Bay

The sea contains shallow fringing coral reefs towards the outer bay and scattered coral communities within. The coral species ***Acropora spp.*** dominates, while species such as ***Pocillapora spp., Goniastrea spp., Montipora spp., Psammocora digitata, Goniopora lobata*** is found here. Literature indicates that the bay had a healthier coral reef in the past. Its remnants are still visible towards the deeper areas, yet the vast majority of the reef is dead, threatened by activities ranging from coastal development, overfishing, marine pollution and the coral bleaching due to the El-Niño in 1998. It was also affected by the December 2004 Tsunami.

With the conclusion of the civil conflict in 2009, numerous hotels are mushrooming around the bay and the coastal ecosystem is being affected at an alarming rate. The remaining mangrove patch and the coastal shrub jungle around the bay need urgent protection as it directly influences conservation, through preventing siltation of the reef during the rainy season. Preliminary surveys have indicated that the lack of substrate is hindering the natural growth of coral. To address the issue of fragmented corals which has diminished the functioning of the reefs, the Wildlife Research and Conservation Trust (WRCT) in collaboration with Maalu Maalu Resort and Spa, the University of Peradeniya and Tokyo Cement PLC launched a Coral Replanting Program in Pasikudah Bay in April 2013.

Objectives and Activities

The project had the objective of restoring and rehabilitating the highly threatened coral reef of the bay area through pooling the available resources, especially of the private sector and the academia. The project also collaborated with the ongoing GEF Full Size Project 'Participatory Coastal Zone Restoration and Sustainable Management in the Eastern Province of Post-Tsunami Sri Lanka'. The activities undertaken by WRCT in the present project included coral reef monitoring and reef keeping, coral replanting and conservation, strengthening community livelihoods through sea cucumber farming and ecotourism training and environmental education and awareness.

Initially, WRCT experimented with several kinds of metal structures for replanting the coral. The structures were designed in a way that they are stuffed with coral rubble and when the

Boulders used for the project

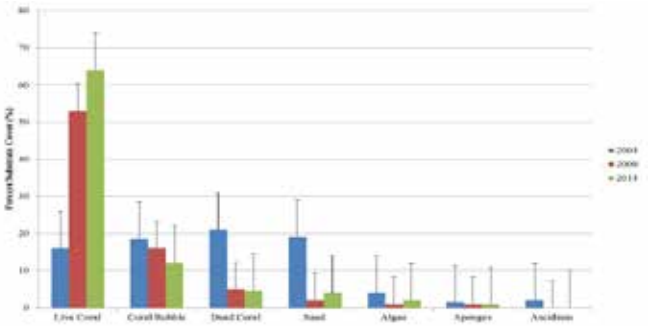
replanted corals were well grown, they will collapse due to the weight of replanted corals so that it will merge with the existing natural reef. From April 2013 to May 2015, 1,267 reef boulders were deployed on the ocean bed, adding a 2 km² surface area to the Pasikudah coral reef. The majority of boulders are oval in shape while few are cylindrical. 430 of them were placed in shallow waters at a depth range of 3-4 feet and the rest (837) at depths ranging from 6-15 feet. All the placed reef balls were planted with 6,275 new nubbins by end of April 2015 and *Acropora spp.* was the main type of coral planted. Other species transplanted included *Pocillapora, Goniastrea, Montipora, and Goniopora* species. Coral nubbins for replanting were from pre-settled underwater coral nurseries by WRCT. The damaged corals of tourist activities and the fishing boats were brought from Kayenkerny reef to establish these nurseries in the bay.

Current status of the reef balls brought to Passikudah

	Number
Boulders placed in the sea	1267
Newly arrived boulders	124
Placed in shallow areas	430
Placed in deeper areas	837
Corals have been planted on	1255
Surface area for the growth of corals	≈2km²
New nubbins added to the reef	6335

WRCT created the artificial coral reefs using dead coral rubble, which were washed ashore due to the Tsunami disaster in 2004 and managed to successfully replant those on artificial reefs. The intention of creating such artificial reefs is to interlink natural reefs and thereby accelerate the natural coral growth rate. WRCT has also replanted corals on the dead reefs. Other than on boulders, 4,565 coral nubbins were placed on these artificial reefs and dead reefs.

Comparison of Substrate Cover in the Passikudah Bay



A survey undertaken by WRCT In 2014 indicated that the reef sites were relatively healthy and the live coral cover had increased by 48% within a ten year time period indicating a significant recovery (Figure 1). However, the shallow reefs towards the near shore area have not shown signs of recovery, which might be due to high algal growth and siltation. The cover of ***Halimeda spp.*** and ***Caulerpa spp.*** towards the shallow area is higher and could be a possible competitor and a threat to the regenerating corals. Therefore, WRCT undertook periodic removal of these algae to keep the reefs healthy.

The planted corals were well established on reef balls two weeks after planting by forming the basal disc. Some have shown signs of branching and some have grown a few millimeters in height. Reef fish also have shown signs of succession by being attracted towards them. The survival rate for transplanted coral was 94% for all types of corals in shallow areas and 100% for deeper areas (>5m). Branching corals showed higher growth rates than non-branching corals in both shallow and deep areas.

The area with highest live reef cover was identified as a special conservation area and presently WRCT is in discussion with the Coast Conservation Department, Hotel Cooperation and the hoteliers to demarcate the area as a protected zone, where the glass bottom boats will not be allowed to enter. With the assistance from the police post situated in the Pasikudah bay, WRCT was able to protect the reef from illegal activities such as removal and trampling of the reef by tourists as well as dynamite blasting and other illegal fishing activities.

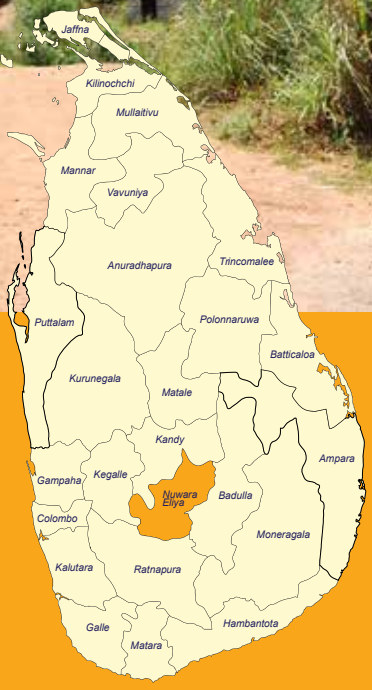
The eight glass boat operators who take tourists for coral viewing were assisted to obtain Coxswain licenses and presently they are registered with the life guard unit of Kalkudah police lifeguard unit. Training was provided to 12 selected fishers on diving and snorkeling and they are helping in coral replanting and reef cleaning activities. 25 female members of the community were assisted to maintain quality and find markets for products such as batik, dairy, palmyra products. Preparatory activities to initiate sea cucumber farming in the area are being presently undertaken.

Twenty two awareness raising programmes were organized on reef conservation for the fisher community, hoteliers, school children, university students and local authorities such as police and DS officers. Students from several schools, Peradeniya University and staff members from Tokyo Cement and HSBC Bank participated in coral reef planting activities. Daily solid waste collection and beach cleaning were undertaken with the Maalu Maalu Hotel, while a small exhibition on project activities is kept in the hotel premises for educational purposes. Ten academic papers were published on the project activities in association with students from the University of Peradeniya.

Lessons Learned and Sustainability

The sustainability of the coral replanting and restoring program depends on the extent to which hoteliers, fishermen, local small-holders are engaged in sustainable fishing and ecotourism activities. A fundamental change in land, coast and sea use practice is needed to achieve long term results.

The project highlighted the need to collaborate with various stakeholders especially the academia and private sector, to ensure sustainability of activities. Continuous monitoring and data collection is crucial to assess the success of coral replanting and in this regard the involvement of university students as well as tourists is a way to maintain the momentum generated by the project activities.



Sloping Barren Lands Converted to Sustainable Home Gardens

Project No:	**SRL/SGP/OP4Year2/CORE/08/06**
Grantee:	**Isuru Jeewithhodaya Foundation (IJF)**
Location:	**Hanguranketha DS Division, Nuwara Eliya District**
SGP Contribution:	**US$ 24,000.00**
Cash Co-Financing:	**US$ 846.78**
In-Kind Co-Financing:	**US$ 6,096.70**
Project Period:	**25 months (02/2009 – 03/2011)**
Number of People Served:	**85 families**
Focal Area:	**Land Degradation**

Soil erosion in the resettled area

Background

Johnsland Estate located in the Hanguranketha Divisional Secretariat Division in Nuwara Eliya District is an inhospitable and unproductive tea land abandoned over 40 years ago. In 2007 the government resettled 196 land slide victim families in 12.14 hectares of this estate. The landslide in January 2007 was due to heavy rains in the area. Each family was given a 20 perch block in this barren and steep land (35-65 degrees) and was assisted in house construction with 28 roofing sheets and LKR 50,000 per family. Starting life all over again in an alien and inhospitable area was a massive challenge for the resettled villagers, who earned their livelihood mainly as day labourers.

The resettled area was degraded land with a rocky landscape, had scattered Mana grass patches with no permanent vegetation cover, resulting in heavy soil erosion during the rainy season. The traditional villages located below the hill slopes were affected by the top soils being washed into their gardens with the rain. Further there was a major constraint in obtaining drinking water as the slopes were too steep for dug wells to be constructed. No measures were taken to conserve the rain water. Preliminary investigations undertaken by Isuru Jeewithodaya Foundation (IJF) with technical support from the National Building Research Organization (NBRO) indicated that there are possibilities of converting the Johnsland settler land into a more productive area, if proper land management techniques were introduced and the application of agro-ecological measures were taken for soil conservation.

Soil erosion during the rainy season

Objectives and Activities

The main objectives of the project was to halt further land degradation and to improve livelihood sustainability of the settlers through addressing issues such as lack of awareness and knowledge, improving soil conservation with construction of terraces, tree planting, conserving small streams, practicing organic farming, improved kitchen management and improving the economic status of women by providing them with self-employment opportunities.

The project was initiated with awareness programs for relevant stakeholders including media personnel and Government and Non-Government Organizations of the area with the aim of obtaining their cooperation and collaboration in implementing the project. Through a series of discussions, 75 households were selected to pilot test the activities of the project. They were the most vulnerable households settled in 6 hectares of degraded land. These villagers were grouped into nine clusters and leaders were appointed for each group. Eight of these groups selected a female member as their group leader.

After building houses on the barren land, around five perches were left in each household for home gardening purposes. Construction of terraces, live fencing and retention walls were undertaken in each individual block of land to minimize soil erosion. Further, the natural drainage of the water springs were protected with 800 m^2 of lock and spill drainage in order to control the surface flow. 1,000 arecanut trees were planted along the drainage lines to strengthen the banks. Fruit plants - mango, lime, orange, pomegranate and ambarella and vegetable seeds were distributed to each household for cultivation. Organic farming methods including composting of kitchen waste were introduced.

Training was given in kitchen management methods in order to optimize the limited space. Energy efficient stoves were installed with chimneys to direct the smoke outwards to minimize indoor air pollution and the risk of exposure to smoke of the women. Financial assistance was provided to the community in constructing permanent kitchens. Forty selected women members were

Terraces and trees used for soil conservation

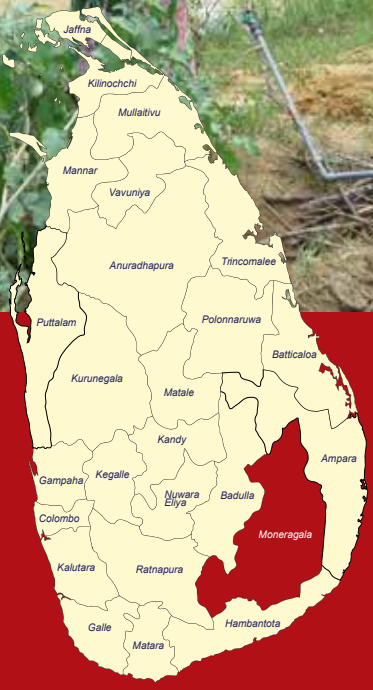
given training in self-employment activities such as sewing and handicrafts utilizing resources of the area such as pinus seeds. They were also provided with basic materials and seed money to initiate self-employment ventures. To encourage savings among the women, a micro-credit scheme was established within the nine groups. Two INGOs, including IOM, supported the project activities by constructing toilets and providing sanitary and hygiene requirements costing around LKR 500,000.

Since the implementation of the project, soil erosion has been significantly reduced, improving the quality of soil. The barren land has been converted into a productive green landscape. Organic farming provides food for the households and generates an income for many villagers. All houses have improved kitchens. Organic waste is converted into compost and liquid fertilizer is made, to be used in the gardens. Villagers are happy about the present condition but for one critical issue i.e. lack of sufficient potable water for domestic use and for home gardening. Villagers and the project officers have developed a strong relationship which is a significant factor for the sustainability of the project. The contour terraces are developing and emerging as eco gardens. Fruit trees and medicinal plants show a steady growth. The constructed retention walls make the land more stable and fertile. Live-fences help in preventing top soil run-off of each garden successfully.

Lessons Learned and Sustainability

The pre-feasibility study undertaken with technical support from NBRO provided a sound background to implement project activities. Organic farming played a significant role in maintaining a positive attitude among the villagers towards applying soil conservation measures. However, supplying water continuously for home garden cultivation especially during the dry months remains a challenge. Converting the grassland on the hill top above the Johnsland settler land into an agro-forest could be helpful in increasing the water availability in the area.

Establishment of small groups, regular monitoring, progress review of project activities and conducting awareness programmes were vital for ensuring continuous community participation. Financial and technical assistance as well as cooperation obtained from both Government and Non-Government Organizations played an important role in the success of the project.

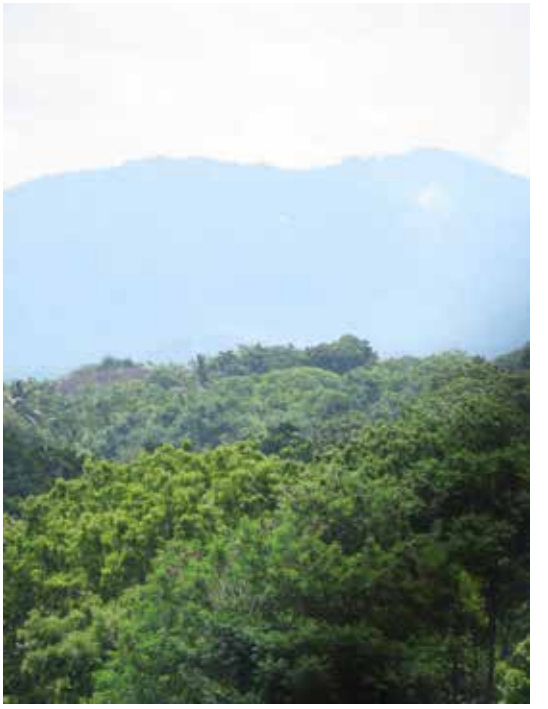


Improved Rain Water Harvesting in Home Gardens for Drought Resilience

Project No:	**SRL/MAP-CBA/2013/04**
Grantee:	**Mihimaw Science Foundation**
Location:	**Katuwawa village in Nugegalayaya GN Division in Monaragala District**
SGP Contribution:	**US$ 32, 160.00**
In Kind Co-Financing:	**US$ 2, 404.00**
Project Period:	**16 months (08/2013 -12/2014)**
Number of People Served:	**44 households, 200 individuals**
Focal Area:	**Climate Change Adaptation**

Background

Katuwewa is a remote rural village in Sewanagala DS Division in Monaragala district. The first settlers in this village were illegal chena cultivators who came to the area in the early 1970s. Presently there are 53 families settled permanently in the village and the ownership of the land is being resolved. Uda Walawe and Lahugala National Parks are located about 20-30 kms away from this village and as a consequence elephants frequent Katuwewa. Until recently there was uncertainty as to which district this sparsely populated village belongs to, as it borders both Hambantota and Monaragala districts. This was a distinct disadvantage as both district administrations ignored the village resulting in hardly any development assistance reaching them.



The National Parks seen from Katuwewa

A majority of the community is involved in agriculture and plant crops such as chillies, cowpea, banana, pumpkin, gourd and other vegetables on land areas ranging from 0.1 to 0.8 ha. Paddy cultivation is done on small plots during the "Maha" season, when water is available. Only a few can access the irrigation water issued from the Uda Walawe reservoir as most of the houses are located beyond the irrigation canal pathways. Unavailability of stored water hinders the community from cultivating crops throughout the year. To overcome the shortage of water, a few villagers constructed a small tank in 1993. However, the storage capacity of this tank was low and insufficient to meet the demands of all the farmers in the village.

Prolonged and extreme drought conditions are becoming a common occurrence in this region resulting in poor harvests and crop destruction. In 2012, Katuwewa faced a severe drought and the community staged a demonstration in front of the relevant offices demanding water security. This resulted in the village receiving piped water for drinking purposes through an NGO project. Overuse of chemical fertilizers in hopes of obtaining larger harvests is a common practice in this area. The majority of the villagers are living below the national poverty line and lack of education hinders them from finding jobs other than farming. Some are involved in illegal bush meat trade to earn a living, especially during the drier months.

Objectives and Activities

The main objective of the project implemented by the NGO Mihimaw Science Foundation (MSF) was to assist the farmer community to improve their livelihood status through adapting to climate change related droughts by rain water harvesting and improved water management practices. The activities carried out in this regard included the rehabilitation of the village tank, the construction of 16 traditional water ponds ("Pathaha") within farm plots, establishing soil and water conservation practices in 50 home gardens; introducing native crop species that are adaptable to drought conditions and providing training to 40 women on microfinance management.

The project activities were initiated with awareness training for all relevant stakeholders including government officials. A Community Based Organization named "Rain Water Collectors" was established and presently 26 villagers are active members and assist the NGO in project implementation.

The village reservoir – before and after rehabilitation

The existing Katuwewa tank, which was haphazardly constructed by the villagers in 1993 had only about four acre feet water carrying capacity and dried up as the dry spell began. MSF identified the importance of enlarging the water holding area for increased storage capacity. The tank bed was excavated and the tank bund was filled, while the spill way was constructed. The bund was turfed using grass to prevent top soil run off during the rainy season. Presently the water carrying capacity has increased to 22 acre feet. The community provided the labour during the construction activities, while technical assistance was obtained from the Divisional Secretariat. With the higher water storing capacity, the cultivation area utilizing the tank water increased from 6 ha to over 17 ha. Initially the farmers over utilized the water without a plan for water management and this led to the drying up of the tank within a few months. Realizing their mistake, they have now formed a water management committee and utilization of tank, water is now under the supervision of the Grama Niladari (Village Officer). During the dry period, water usage by motor pumps is limited to 2 hours for an individual farmer. In order to protect the watershed of the tank, trees such as Kumbuk *(Terminalia arjuna)* and Mee *(Madhuca longifolia)* were planted within the allocated 2.5 ha area, with community participation.

A beneficiary at her water pond

16 small water ponds were constructed within home gardens of selected community members. The total water retention capacity of these ponds is 556,490 cubic feet and an individual pond capacity varied between 12,000 - 84,000 cubic feet. Two of the ponds retained water throughout the year while five retained water for more than five months. Other ponds are newly constructed and yet to be stabilized. Water springs have sprung adjacent to several ponds indicating the improved water retention capacities in the ground. The pond water is utilized to cultivate both paddy and other food crops.

Small fences were established around each pond with plants, mainly nitrogen fixing legumes such as *Gliricidia sepium* and Wild sunflower. The leaves harvested from the trees are utilized as manure.

Home gardening done by family members

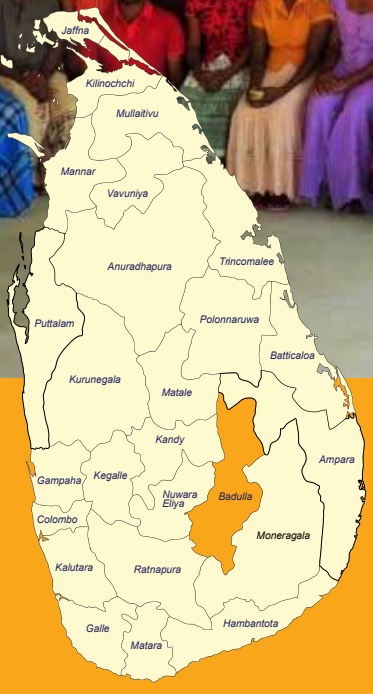
Training on organic farming, soil conservation measures, cultivating drought resistant crop varieties as well as improving family food security and micro financing were some of the activities undertaken. Female members and children were the most involved in home garden establishment and the training motivated them towards organic farming and cultivating food crops. Few female members, including a thalassemia patient had managed to improve their home gardens to the extent that the harvest from it provided them an additional income and enough food to feed their families, thereby improving food security of the household. One female member sells the seeds from her crops to earn an income.

To improve the handling of finances, the female members were divided into smaller groups and a micro-credit scheme was introduced. Drought resistant seed varieties including three traditional rice varieties (Gotabaru, Heenati and Kuruluthuda) were cultivated, vegetables and fruit trees were distributed and farmers could obtain a profitable harvest from them. MSF intends to introduce the production of dried banana as a new livelihood option to the community. The feasibility of the product is being studied at present. Different varieties of banana are available throughout the year and 24 members that include 21 women members are keen to start the venture.

Lessons Learned and Sustainability

Rainwater ponds are ideal solutions for improving water security for small scale agriculture in the dry zone, as the stored water helps in recharging the ground water sources. The success of traditional ponds depend mostly on their construction in correct locations, hence understanding the groundwater flow is vital. The water available from these ponds together with the rehabilitated and expanded tank assisted the poverty stricken community in Katuwewa to improve their livelihood conditions. For sustainability of the project, it was important to introduce good water management practices at both household and community levels especially when utilizing the tank water by 16 farmers.

Continuous dialogue and awareness building was necessary to understand the specific problems faced by each individual farmer. This in turn assisted the NGO to provide a wide range of solutions to cater to their different needs, resulting in 80% of the villagers participating in project activities. To keep the community motivated during the drier periods of the year, MSF introduced incentives such as prizes for the best home gardens. Utilization of a log book, especially by the female members helped in progress review of the home gardens. The cooperation extended by government officials including the Divisional Secretary and the village officer, was vital in project implementation and its success. Introducing new livelihood options was important for assisting this community to overcome the lack of income generating opportunities as well as adapt to climate extremities and variations.



Community Interventions in Arresting Land Degradation and Watershed Protection at Narangala

Project No:	**SRL/SGP/OP5/STAR/LD/2014/23**
Grantee:	**Narangala Conservation Foundation**
Location:	**Soranatota DS Division, Badulla district**
SGP Contribution:	**US$ 38, 038.00**
In-kind Co-financing:	**US$ 1,996.00**
In-cash Co-financing:	**US$ 6,228.00**
Project period:	**22 months (09/2014 – 07/2016)**
No of People Served:	**62 families**
Focal Area:	**Land Degradation**

Background

Narangala and the associated mountain range is an important above watershed located in the Soranatota DS Division in the Badulla District. Rising up to 1,450 m above sea level, this magnificent mountain range is home to a variety of plants and animals. Mana grass (Citronella) is spread throughout the mountain range while small segments of forests are found in several locations. These forest patches provide a refuge to the wildlife in the area. Tea plantations and homesteads occupy a main part of the mountains.

The sloping lands of Soranatota DS Division has been severely affected by land degradation mainly due to poor land use practices and changing weather conditions. Several communities in the area had to be evacuated due to high rainfall-induced landslide warnings in 2011 and 2012. The farming community in the sloping lands are the most affected due to degradation of land and changing rainfall patterns, while paddy cultivation in the downstream is affected with frequent low flow conditions of the streams during the "Yala" season. Lack of access roads and other infrastructure along with a poor marketing networks and lack of technical knowledge has resulted in low income from farm produce. Poverty and low education levels are social issues that need urgent attention in this area.

The view from Narangala

Dikpitiya and Gannilegama GN Divisions in Soranatota face all the aforesaid barriers for livelihood improvement. The steep sloping lands of the upper reaches of these two villages had been under tea cultivation during the colonial period and subsequently these tea lands were abandoned about three decades ago due to poor productivity owing to the degraded soil and inconsistent climatic conditions. At present, these abandoned lands are regenerated with exotic plant species introduced during the colonial period with a very poor rate of natural ecological succession. The forest is about 60.7 hectares in extent and no previous studies exist on its importance, including the biological wealth and the ecological services provided. Perennial streams originating from these lands became ephemeral due to illegal timber felling and land degradation. These streams are vital for the downstream community as they provide both domestic and irrigation water needs of their day to day life. Pepper cultivation is one of the main income generating avenues for the community, but it is very poorly maintained.

Objectives and Activities

The project had the objectives of arresting further land degradation and protecting the watershed in Dikpitiya and Gannilegama GN Divisions. The project also aimed to empower the village community by introducing sustainable livelihoods. Another main aim of the project was to declare the Narangala watershed as a reserve for wildlife which would also protect the watershed.

Hundred and sixty two members from sixty-two families of the two targeted villages were directly involved in the project. Two Community Based Organizations have been formed to empower the communities as well as increase community participation in project activities. The NGO had established a Centre for Forest Research and Community Guidance that can also be utilized as an ecotourism venture.

Stone walls put in place

A survey to identify the lands that needed soil conservation measures was undertaken with the technical support of the Natural Resource Management Center (NRMC), Department of Agriculture in Kandy. 32 hectares of erosion prone lands were stabilized utilizing the SALT method and stone walls. Under the livelihood component, traditional paddy varieties were successfully introduced.

High community participation in the project activities led to considerable reduction in illicit timber felling and liquor production within the forested areas.

Traditional paddy introduced by the project

A study assigned by the NGO indicated the presence of high biodiversity, especially bird and butterfly species in the forests associated with the Narangala watershed. Obtaining permission from relevant authorities to declare the watershed as a wildlife reserve took considerable effort and time. High level political backing was needed to gazette the forest under the Department of Wildlife Conservation. To facilitate this process, the NGO, with the assistance of a leading university in Sri Lanka, compiled a report on the effects of development on environment and natural resources in the area which was later distributed and a media campaign was organized. After several delays, a decision was finally taken at the Badulla District Development Coordinating Committee meeting to declare and gazette the Narangala Mountain and watershed as a reserve. This meeting was chaired by the Uva Province Chief Minister.

The Narangala watershed area

Lessons Learned and Sustainability

Project implementation was delayed initially due to heavy rains and the NGO utilized this period to collect baseline information which helped to plan the project implementation strategy. Several discussions were held with the community members to understand issues as well as to introduce the project interventions. The transparency thus led to high community participation and willingness to 'own' the project and its activities later. The information and education center provided a base for the community to interact, learn and share information to sustain the activities.

Collaborating with Governmental institutions for obtaining technical knowledge was crucial for the success of the project. The advice from NRMC, Department of Agriculture to control soil erosion and manage degraded land and consultations with the Department of Export Agriculture to increase the productivity of pepper cultivation was vital to achieve the expected results of gaining a better income for the community, build their capacities to manage the land and control top soil runoff of their farming lands.

Wildlife Refuge in an Urban Setting

Project No:	**SRL/SGP/OP5/STAR/BD/2014/29**
Grantee:	**Organization for Aquatic Resources Management**
Location:	Colombo District
SGP Contribution:	**US$ 47,562.00**
Cash Co-Financing:	**US$ 2,913.00**
In-Kind Co-Financing:	**US$ 997.00**
Project Period:	**20 months (11/2014 – 07/2016)**
Focal Area:	**Biodiversity**

Background

Colombo is the capital city of Sri Lanka and the most important district politically and financially. It is also the smallest district in the country with the highest population density. It belongs to the lowland wet zone climatic zone, which is renowned for its rich biological wealth. Yet, the accelerating population growth and urbanization have led to a drastic reduction of the tree cover within the district. As a result, biodiversity is restricted to small pockets in this highly fragmented land area. Several types of human-influenced urban biodiversity shelters including small home gardens, urban parks, temple gardens, cemeteries, play grounds and roadside avenue plantations act as refuges to wildlife.

The Western Purple-faced Leaf Langur found in Colombo

The Bellanwila-Attidiya wetland and sanctuary is a valuable animal refuge, located amidst the densely populated suburbs of the south-eastern outskirts of Colombo. Its extent of 372 hectares has been subjected to many encroachments and illegal land fillings over the years. The rapid urbanization and the accelerated population growth has been responsible in drastically reducing this important wetland to less than half its original extent. At present, its biodiversity is fast disappearing and the highly fragmented area is becoming further degraded each year.

Research studies have indicated that the Bellanwila-Attidiya Sanctuary contain a broad diversity of fauna including several globally threatened and endemic species. For example, the Western Purple-faced Leaf Langur (***Semnopithecus vetulus nestor)***, a subspecies of the Purple-face Leaf Langur, endemic to Sri Lanka and critically endangered globally, is found here and around Colombo. Other important species include the Fishing Cat, Barking Deer, Hog Deer, Mongoose, Civet Cats, Pythons and a large number of bird species.

Many of these animals face threats especially from road accidents and electrocution, at times the young get separated from their parents and are lost and abandoned. Due to lack of facilities in the wetland, the practice was to translocate most of the injured or orphaned animals to dry zone wildlife health centers which are totally alien habitats for wet zone animals. It was therefore an urgent need to establish a recovery center to treat badly effected animals and provide a refuge for the injured or orphaned young animals before releasing them back to a suitable environment.

The Department of Wildlife Conservation (DWC) promoted the idea of establishing treatment and holding facilities within the wet zone, specifically in the Bellanwila-Attidiya sanctuary, as it would facilitate the releasing of the recovered wildlife back into their native habitats or a suitable alternative, rather than translocating them to totally alien habitats. As an initial step to resolve the issue, DWC erected a wildlife holding area within the eastern border of the sanctuary.

The wildlife holding area at Bellanwila-Attidiya

Objectives and Activities

The project, implemented by the Organization for Aquatic Resources Management (OARM) in collaboration with the DWC, initiated a process to meet further needs of the existing wildlife holding area and thereby provide better facilities at the refuge for the injured or abandoned wildlife.

OARM constructed five enclosures for ungulates, five cages (8ft x 5ft x 10ft) for monkeys and eagles, and eight cages for snakes. Office space for the staff was provided by refurbishing a container, while another building was constructed for providing accommodation to the veterinary surgeons. Further, the repairs of the boundary fence of the 2.02 hectare property was completed while electricity, water and telephone facilities for the site were provided.

The renovated and upgraded wildlife facility started taking care of injured animals from October 2015. According to the records, during a ten month period, 627 animals belonging to 58 species have been treated at the facility. Of the treated, 483 animals were released after full recovery. As the graph below indicates, the highest number of treated species were birds. Among treated birds, the Greater Coucal *(Centropus sinensis)*, which is a common home garden bird and the Spot-billed Pelican *(Pelecanus philippensis)* that frequent the wetlands were the most abundant injured species.

In the case of mammals, the Purple-faced Leaf Langur was the most treated for injuries. Out of the 41 monkeys treated, 20 were released after successful treatment. Other animals treated at the facility within this period included 6 Indian Fishing Cats, 6 pythons, 112 Indian Star Tortoises, 210 marine turtles and 2 Sambar Deer. Volunteers from the Young Zoologists' Association (YZA) assisted in taking care of the animals.

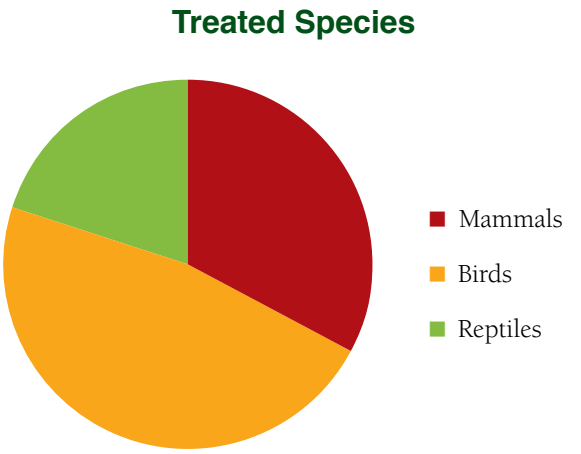


Fig.1: Composition of treated animals

Lessons Learned and Sustainability

A baby Purple-faced Leaf Langur being fed

The project was able to cater to a long felt need of the Western wildlife region of the DWC. From the inception of the project, activities were carried out under the supervision of veterinary surgeons of the DWC to ensure that the department will continue the management and maintenance of this facility. The site is managed by a team from the Veterinary Unit of the Wildlife Health Management Division of DWC, headed by the Veterinary Surgeon responsible for the Western Province. Veterinary surgeons are employees of the DWC and allowances for volunteers and animal treatment are borne by the DWC.

The recovery rate of animals in the urban wet zone has increased as the treatment can be provided much quicker due to the reduction of the response time.

Opening the facility for educational and recreational purposes is proposed as a future activity. The Rehabilitation and Health Care Centre has received co-sponsorship in numerous ways including funding, technical and volunteer support from the Inter-governmental, Private, Non-governmental and Volunteer sectors. MAS Intimates (Pvt) Ltd provided a matching grant to meet additional needs to ensure the facility meets the required standards for its overall success.

Community Managed Electric Fence for Mitigating Human Elephant Conflict

Project No:	**SRL/SGP/OP4Year2/RAF/08/07**
Grantee:	**National Ethnic Unity Foundation (NEUF)**
Location:	Uhana GN Division, Ampara District
SGP Contribution:	**US$ 25,000.00**
Cash Co-Financing:	**US$ 1,801.70**
In-Kind Co-Financing:	**US$ 5,963.90**
Project Period :	**25 months (02/2009-03/2011)**
Number of People Served:	**42 families**
Focal Area:	**Biodiversity**

Background

Ratmalyaya is a remote rural village established under the Gal Oya Development Scheme in the early 1950s and is located in the Uhana D.S Division, Ampara district. This village is surrounded by the Buddhangala Sanctuary, which is an important dry zone forest with trees of high medicinal and timber value and wetlands as well as grasslands. The 1,841 ha sanctuary was declared as a protected area under the Fauna and Flora Protection Ordinance in 1974 to conserve the high biological wealth that includes large herds of Asiatic Elephants who utilize this land and the adjoining protected areas such as Gal Oya National Park for breeding and feeding throughout the year. Further, this area is known for its archeological significance as a Buddhist monastery with ruins of a stupa and other buildings are found within.

An elephant in the vicinity of the village

The isolated village community solely depends on farming, mainly paddy, for a livelihood, however frequent droughts, sudden floods as well as wild animal attacks are affecting their harvest, leading the people to depend on forest resources for sustenance. The increasing population in this village and adjoining villages bordering the sanctuary exert pressure on the small protected area while reducing and degrading the original habitats of animals. Encroachment for agriculture and cutting of trees with timber value are among the major threats to the sanctuary. As a result of this destruction, the elephants stray into the planted lands and homesteads of the village in search of water and food especially during drought periods. The elephants are especially fond of the young crown leaves of coconut trees and paddy as it matures. This had led to an increasing human elephant conflict with both human and elephant mortalities as well as property damage and harvest losses being reported. In May 2010, a woman was killed by an elephant in her own compound.

To keep the straying elephants away from homesteads, the Department of Wildlife Conservation (DWC) constructed a linear electric fence for 40 kilometers. With time, this fence was broken in places by elephants. Responsibility for repairs and maintenance was borne by none as there were no directions given. Further, the electrical supply to the fence is through a small solar powered energizer. The functioning of the fence is often disrupted as people in different villages along the way sabotage the flow because of the reduced power intensity when sharing with others. Initially the NGO, National Ethnic Unity Foundation (NEUF), in collaboration with the community tried to repair the damaged electric fence and plant Jute and Bougainvillea alongside as further protection. The planting of Jute was unsuccessful as elephant trampling destroyed most of the plants and unexpected floods affected the growth of others. The 4,500 Bougainvillea plants grew successfully, yet, were ineffective in keeping the elephants away as they were planted too wide apart. To address this shortcoming, 4000 Palmyra plants were grown in between the

Bougainvillea plants. Realizing that the live fence was not a sustainable solution to keep the straying elephants, NEUF decided that another strategy was needed to keep the elephants from attacking villagers' crops. Thus the idea was born to erect a fence around the village and maintain it with the participation of the community as a long term solution to their problem.

Discussions were held with the DWC to come to an agreement, that under the project Ratmalyaya village will erect a separate electric fence round the village which will be powered by a separate solar panel and the fence will be looked after by the Ratmalyaya village community.

Project Objectives and Key Activities Undertaken

The National Ethnic Unity Foundation (NEUF), after several discussions with relevant stakeholders, including government officials and community leaders, developed the project with two objectives i.e. to minimize human elephant conflict and improve livelihoods of the Ratmalyaya village community. The activities undertaken were: construction of the electrical fence around the village and ensure its maintenance, introduction of alternative crop varieties in home gardens and establishment of a payment scheme for compensating those who suffered losses owing to elephant damage.

Reconstruction of the electric fence

The rice grinding mill

To take the project activities forward, a community organization "Ratmalyaya Krushi Nishpadana Samithya" (Ratmalyaya Agriculture Producers Society) was established. The newly erected electric fence was provided with a solar panel and generator to ensure an undisrupted electric supply. After the 7 km fence was erected, the community was divided into four groups with each group having the responsibility of maintaining a portion of the fence. They were trained to undertake daily monitoring of the fence and to keep a log book about its condition. If the electricity supply was interrupted, immediate corrective measures were taken. As it became apparent that the farmer community was not financially strong enough to replace damaged parts and general maintenance of the fence, an innovative mechanism was introduced to take care of this need. In this regard, a rice grinding mill was established as a community profit generating venture. In the past, paddy harvested in Ratmalyaya was taken outside to be milled as the facility was not available in the village. The idea of a mill in the village was therefore received with enthusiasm and implemented successfully. The money earned from this was utilized for the maintenance of the electric fence as well as community uplifting activities (e.g. small loan facilities). To motivate the community, a revolving fund was established where it was decided to pay a maximum compensation of LKR 10,000.00 for each damage incurred owing to elephants.

Families were encouraged to start agro forestry on home plots and were provided plants with timber value (Teak and Mahogany) to reduce dependency on forest resources. Trees of the citrus family e.g. orange and lime were also planted which would act as a deterrent for the elephants to enter home gardens. Nitrogen fixing ***Grilicidia cepium*** live fences were established around the homesteads which would also be a potential source of firewood for the households.

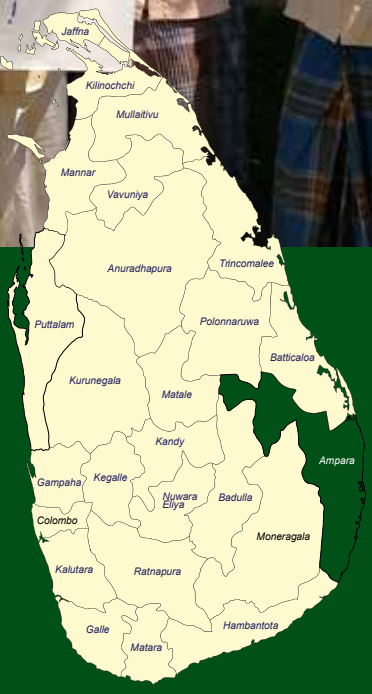
Lessons Learned and Sustainability

A household survey carried out in February 2015 at the Ratmalyaya village to examine the cost effectiveness of electric fencing to prevent elephants from straying out of protected areas into farming fields and other community user areas revealed that it was effective in reducing crop damage by 88%, livestock depletion by 60%-90% and property damage by 80%. 86% of 42 householders stated that their food security levels were somewhat secure to very well secure while 85% stated that the cropping pattern has significantly increased where farmers now grow different types of crops including perennials and cash crops. The time spent chasing wildlife has reduced significantly, from 55% to 14%. After the installation of the fence, home garden extent has increased from 2%-26%.

More than 81% stated the fence is effective and 92% said their tolerance level of elephants have improved. 93% said that they appreciate the value of elephants and are better aware of the importance they have for biodiversity, ecology, history, culture and religion. 93% stated their income has increased after the installation of the fence and 74% that quality of life has improved. All participants stated that they are willing to pay for establishing a suitable mechanism to pay for the damage and conserve elephants in the wild. 33% gave more than Rs.1000 per month as the amount.

Increased home garden extents

Human mortality can be said to have been reduced in the study area and continues to be at insignificant low levels. The analysis suggested that total net present value of the cost of the electric fence was less than the net benefit of it for the community. The cost-benefit ratio of electric fence was shown as 10:13. These results illustrate that the electric fencing program is economically and socially beneficial in reducing human-wildlife conflict, crop damage and livestock depredation around the protected areas. Decisions to modify activities, especially redirecting financial resources to address emerging issues lead to long-term sustainability of the project. Establishing the profit making rice grinding mill assisted in maintaining the electric fence. Further, the compensation afforded by a revolving fund provided a sense of security to a community that lives in a very unsafe environment. In activity implementation which may have long-term consequences in a short project time frame, it is vital to keep community interest intact and to maintain a continuous dialogue with the members. This was effectively undertaken by NEUF, which was another factor leading to achieving the satisfactory results in this project.



A Rights Based Approach to Conservation

Project No:	**SRL/SGP/OP5/STAR/BD/2014/13**
Grantee:	**National Ethnic Unity Foundation (NEUF)**
Location:	**Thirukkovil DS Division, Ampara District**
SGP Contribution:	**US$ 31,237.00**
Cash Co-Financing	**US$ 3,535.00**
In-kind Co-financing:	**US$ 4,371.00**
Project Period:	**17 months (07/2014 – 12/2015)**
Number of People Served:	**145 families**
Focal Area:	**Biodiversity**

Background

Bakmeewewa-Thimbirigolla Reserve Forest is situated close to the Lahugala National Park in Ampara District, Eastern Province of Sri Lanka. It provides a home to a number of endemic and economically valuable flora as well as mammalian (including Asiatic Elephant), avian and amphibian wildlife. The 30 year ethnic conflict in the country spread into the area in the early 1990s. The constant clashes between militants and government forces forced the traditional pastoralists out of the Wattamadu grasslands situated within this forest, which they used to feed their cattle for generations. According to a gazette notification issued in 1976, Wattamadu grassland amounting to 1,560 hectares was designated as pasture, for the sustainable use of pastoralists to feed their milk cows and water buffalos. About 12,000 cattle belonging to 125 traditional dairy farming families used the grassland.

With the militants were being driven out from the area in 2004, farmers from towns further away started to forcibly acquire the grassland for paddy cultivation. They used strong political backing for blocking the pastoralists from entering the grasslands. At the time, the National Ethnic Unity Foundation (NEUF) was actively involved in ethnic harmonization and livelihood rights of pastoralists and launched a campaign to highlight their issues. Discussions were held with the Forest Department (FD) and the police in what was largely informal engagement. No real action was possible since such efforts were considered low priority at the time.

Deforestation in the Bakmeewewa-Thimbirigolla forest

With the end of the conflict in 2009, a special gazette notification was issued by the FD in 2010 declaring the 47,136.31 hectares of the Bakmeewewa-Thimbirigolla forest as a Reserve Forest under the Forest Ordinance. Despite the increased legal provisions for protecting the biological wealth and sustainable use, organized groups from towns further away continued to encroach the forest for paddy cultivation, wiping out 243 hectares worth of forest and grasslands. Bulldozers were used to completely flatten the Wattamadu tank/reservoir causing significant long term damage to the stability of the grasslands and the dependent wildlife. In the meantime, the pastoralists, now free to enter the area with the cessation of hostilities, brought their cows in and it was no surprise that clashes erupted between the two groups. The intention of the encroachers backed by powerful forces was to create a village within the protected forest, which was a clear violation of environmental law. The situation reached a critical juncture during the 'Maha' season of 2013 with some pastoralists engaging in a fast-unto-death as a protest against the encroachers. At this point, the NEUF sought legal relief for the problems of the pastoralists and submitted an application for a writ to the regulatory and enforcement agencies. Meanwhile encroachments were also taking place in other parts of the reserve, especially in Pannalgama in the Uhana DS division where villages were encroaching the forest for cultivation of maize.

Posters of protest by farmers

Objectives and Activities

NEUF approached GEF-SGP Sri Lanka for financial support to solve this highly sensitive and controversial situation and bring about justice for the environment and the pastoralists. The main objectives of the initiative were to minimize forest destruction and encroachment. Two different approaches to address issues were sought i.e. litigation and awareness campaigns at Wattamadu, and empowering farmer community and forest demarcation at Pannalgama.

At Wattemadu, NEUF worked in close collaboration with the Alayadivembu Livestock and Dairy Farming Agriculture Co-op Society. It took almost two years to ease tensions and disturbance of the peace that resulted from the battle between pastoralists and farmers and to protect the forest from further encroachment. Despite NEUF initiatives, the farmers were allowed to cultivate paddy on the grassland for several seasons by the district Magistrate in Pottuvil. The courts also permitted the farmers to erect a fence around their cultivated lands. In spite of this setback, NEUF and its partners and beneficiaries were not disheartened. NEUF escalated litigation by filing a revision application in the Provincial High Court of the Eastern Province in Kalmunai. This action proved positive with the High Court (HC) granting interim relief to the petitioners by issuing a stay order. In that order, HC allowed the pastoralists to enter the grassland but not the farmers. A massive media campaign was undertaken to spread information nationwide about the plight of the victimized environment and pastoralists.

The farmers filed a motion in the appeals court of Colombo in January 2015 to set aside the interim orders issued by the Kalmunai High Court. NEUF hired two senior lawyers to look after their side of the case. In December 2015, the Appeals Court rejected the case of the farmers, contending that the Magistrate's Court of Pottuvil had gone beyond its powers to allow the farmers to continue to cultivate the disputed lands and upheld the orders issued by the High Court of Kalmunai.

After a running battle fought over two years, environment and social rights were served despite the strong, vicious and manipulative forces that were fighting against them. As a result of this process, water sources in three tanks within the forest were free from overexploitation and made available for the wildlife. A management plan for Wattamadu grasslands was prepared with all relevant stakeholder participation and this was implemented by the Community Based Organization (CBO). The continuous community participation for grassland protection was ensured by providing training on methods for enhancing diary productivity.

At Pannalgama, the second location where encroachments were taking place, the main objective was to reduce encroachment and destruction of the forest by communities living in the peripheral area. Seventy-five farmer families were identified and encouraged to convert 15 hectares of mono crop farmlands into agro-forests. They were provided with fruit plants, seeds, beekeeping equipment and training. To make water available for farming two agro-wells were constructed and pipe lines were provided for eleven households to access water from the two wells. A live fence of lime trees was planted on 2 hectares as a demarcation of the forest. For livelihood uplift, 10 female beneficiaries were trained in dressmaking and one sewing machine was provided for their benefit. The CBO Mithrathva Agro Products Foundation was formed for long-term

sustainability of the activities. Ten boards stating the importance of protecting the forest as well as its legal status were erected.

Lessons Learned and Sustainability

Harmonizing the human-environment interface requires far more than ensuring that pristine, legally protected land is not compromised, damaged or destroyed by those with the backing of power. NEUF engaged in two critical exercises to ensure regeneration of damaged areas and to minimize encroachments even while the full-scale legal battle was ongoing. These were through a community based reforestation exercise that aimed at planting perennials and creating a natural boundary of the forest border by growing plants such as lime and orange. These initiatives also provided environment regenerating agro-economic alternatives to the area farmers. The battle on the part of NEUF and its supporters on behalf of the pastoralists/cattle and buffalo herders was closely watched not only by the people of Ampara District but also local and national level politicians. It conclusively proved that strategic grassroots socio-environmental activism could win out against a political culture that was used to getting its way regardless of how much damage and destruction was caused to communities or the environment. Although public interest litigation has been used by national level organizations successfully on many instances, this was the first time where a small group, lacking either legal knowhow or financial capacity still managed to acquire both through careful partnership, committed activism and single minded purpose to achieve a victory.

In conversation with the pastoralists

Undertaking an in-depth PRA to identify the key stakeholders and their level of involvement initially, played a pivotal role in understanding the exact nature of the victimization of pastoralists and the damage to the environment caused. To understand the nature of the forces against them, NEUF organized pastoralists, local environmental organizations such as the Dry Zone Conservation Society to provide environment related inputs and insights, religious groups to provide moral and spiritual support to the cattle herders and media organizations such as Sirasa TV to provide as much coverage of the issues as possible. Furthermore, formal engagement with the authorities was sought for the sustainability of the approach and work. Following due-process, NEUF and its community beneficiaries and supporting partners first went in for formal discussions with enforcement agencies (Police/Army), oversight agencies (Local Authorities) and regulators i.e. Forest Department's District Forest Officer (DFO), Regional Forest Officer (RFO) and the Conservator General of Forests.

Building Resilience for Environmental Change

Project Nos:	**SRL/MAP-CBA/2013/05**
Grantee:	**Naula Grameeya Sanwardana Maha Sangamaya**
Location:	**Andawela GN Division, Naula DS Divison, Matale District**
SGP Contribution:	**US$ 37,350.00**
In-Kind Co-Financing:	**US$ 4,594.00**
Project Period:	**16 months (08/2013 – 12/2014)**
Number of People Served:	**230 families**
Focal Area:	**Climate Change Adaptation**

Background

Andawala-Udagama is a village located in Naula DS Division in Matale District and is bound by abandoned tea lands in its southern reaches and the Nagala Forest Reserve adjacent to the Knuckles Conservation Forest in the south. The village could be divided as 'upstream' and 'downstream' due to its considerable terrain variations.

Altogether, 194 famillies live in the downstream and 45 famillies of Tamil ethnicity live in the upstream, most of whom were estate labourers in the past and work as day labourers in the agricultural fields and plantations at pesent.

Andawala - Udagama

Access to the households located on the steep upper slopes is through foot paths that are bisected by small springs in several places which are inaccessible during the heavy rains. These streams merge with Inguruwatte Oya, a branch of Amban River that provides water to the Moragahakanda-Kalu Ganga Project (MKGP) which is presently under construction. Wooden poles are used to cross this Oya, which endangers lives, especially during the heavy rains.

Rainfed agriculture is the mainstay of the economy in the lower reaches. Paddy is farmed only during the 'Maha' season, when adequate water is available. Vegetable cultivation is done throughout the year. Water for paddy fields is provided through a channel carrying water from an anicut constructed in 1951 in the upstream by damming the Ingurwatte Oya. Due to the unpredictability of rainfall as well as non-maintenance of the anicut, the irrigation channel conveying water deteriorated over the years. Heavy siltation had led to blockage of the channel at several places resulting in flooding of the area during heavy rains.

Children crossing the Oya on tree trunks

The village is prone to floods, droughts, slope failures and degradation of its lands due to its geographical setting. During heavy rains, the sloping lands are subjected to severe soil erosion, with the possibility of land slide occurrence and flooding of the paddy lands. The heavy flooding of paddy lands in 2012 was a hard hit on the farmers' livelihoods, and recovery from it was a major challenge. Extreme rainfall is followed by drought and the village experiences frequent droughts especially during the months of August and September. The impacts are magnified due to poor irrigation infrastructure, and lack of maintenance of the anicut and irrigation channel. The upstream community is more vulnerable as the streams they depend on for all water uses have no water during the dry months. Further, in the absence of an assured domestic water supply for the area, the community depends on natural springs and dug-wells for their drinking water needs, which are subject to frequent drying out due to erratic seasonal rainfall distribution in the

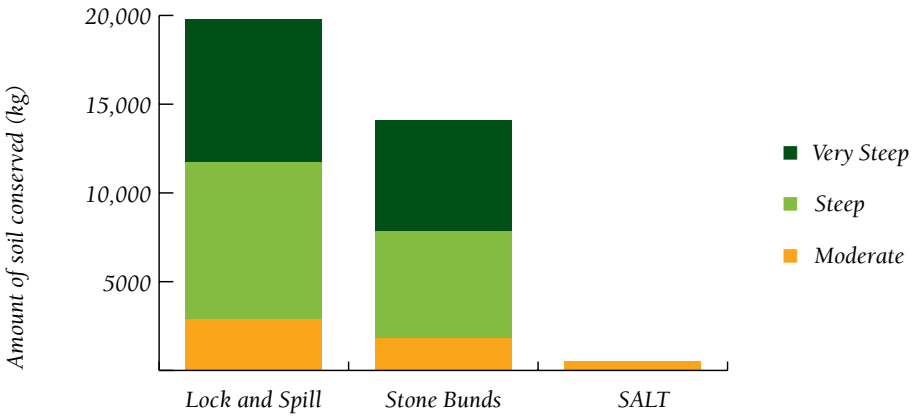
area which may be a result of climate change and variability. Water quality testing indicated high prevalence of *Escherichia coli* in the stream indicating faecal pollution.

Objectives and Activities

Naula Grameeya Sanwardana Maha Sangamaya (NGSMS) implemented the project with the main objective of enhancing the adaptive capacities of the villagers to the changing climate, through piloting a range of coping mechanisms for the reduction of vulnerability to climate change and variability. The project intended to enhance the capacities of the Andawela village community through provisions for improved livelihoods, providing infrastructure to minimize damage from floods and droughts and basic human needs such as toilets and clean drinking water. The activities included rehabilitation of the damaged anicut (weir), 2 kms of the canal and culverts, stream bank conservation, soil conservation in selected farm plots/home gardens and provision of safe drinking water and sanitary facilities, for upstream families, most of whom resort to open defecation.

Community members establishing stone bunds

The technical guidance for the project was given by the Natural Resource Management Centre (NRMC) of the Department of Agriculture, Kandy. The most vulnerable land plots of the village were identified using location, land slope and water availability to implement the practices. To minimize land degradation and soil erosion, all home plots were measured and contour-marked and each household provided with a map with written instructions on which crops to grow to minimize soil erosion and increase production. The soil conservation measures in three different slope categories were, Stone Bunds (3,100 m), SALT live fencing (300 m) and Lock and Spill Drains (4,600 m). For the farmers who implemented these measures in their lands, an incentive payment was made by the project to compensate for the loss incurred in earning the daily wage. Total soil loss arrested by these interventions after a year was measured and the results are shown in the diagram below. For this activity, co-financing was provided by the Moragahakanda Kalu Ganga Project mega water scheme. With this partnership, the number of villagers implementing stone bunds in their allotments increased to 50 during the project period with more farmers continuing to benefit over time.



Rehabilitation of the damaged anicut/weir and canal network (2 km in length) for irrigation water was highly valued by the farming community. Both males and females of the village responded to the task at hand with the fullest cooperation, providing unskilled labour throughout the period. A nominal fee was paid for their labour so as not to disrupt their daily earnings. Off-farm soil and water conservation measures were undertaken in the form of checkdams and brushwood dams. 3,500 trees such as Bamboo and Kumbuk were planted on the banks of the irrigation canal, to prevent bank erosion. After the repairs, the water availability for cultivation in the 'Maha' season increased, and as a result, more farmers were involved in paddy cultivation. In the 'Yala' season, both communities had access to irrigation water for vegetable, and for limited extent, for paddy cultivation. 50 community members were provided with perennial crops such as Pepper, Oranges, Cinnamon and Coffee that can withstand weather extremes.

Bathing and other water needs of over half the village was met by constructing a commonly used bathing place with two spouts having a 1 cubic ft. per second discharge. A bridge was constructed and the upstream householders, mainly elders, the sick and school children, are able to cross the stream without danger. A 15,000 litre tank was built to provide safe drinking water to 50 families. The water was brought from the mountain stream to a storage tank for distribution to the households. A Community Based Organization was established to overlook the provision of water. A minimum charge was levied from each household for the management, repairs and maintenance of the supply scheme. 40 toilets were constructed with each family providing 50% contribution in the form of labour and material.

Lessons Learned and Sustainability

The project demonstrated that when strategies and reasonable finances are in place to implement interventions which are participatory in nature, challenges could be addressed successfully, especially when measures undertaken are important to the community such as access to water for irrigation and drinking, conservation of agricultural lands and capacity building. Strengthening the farmer society and forming a Community Based Organization for the management of the water scheme are steps taken to ensure sustainability. The participation in societies and management committees were without pay, demonstrating that when project activities are conducted in a transparent and participatory manner, sustainability of activities can be ensured.

Improved farming

Due to the unpredictable heavy rains in November 2014 which caused flooding in the lowland areas, the hilly area was unapproachable as the existing foot paths were waterlogged and the bunds were breached in several places. The NGO worked with the community in disaster mitigation and risk reduction which won them support to continue the project work after the disaster period.

Enhanced linkages with the MKGP assisted in expanding soil conservation and land management interventions in the village. This was mutually beneficial for the community as well as for the watershed conservation component of the MKGP mega water diversion scheme. This partnership is successful to date and still continues.

Minimizing Soil Erosion in Hilly Slopes and Conserving Water

Project Nos:	**SRL/06/01, SRL/SGP/OP4Year1/CORE/08/09**
Grantee:	**Naula Grameeya Sanwardana Maha Sangamaya**
Location:	**Murutholuwa, Bibila and Wewaththaawa villages in, Murutholowa GN Division, Naula DS Division, Matale District**
SGP Contribution:	**US$ 20,370.00 , US$ 20,000.00**
Cash Co-Financing:	**US$ 462.00, US$ 11,942.00**
In-Kind Co-Financing:	**US$ 6,574.00, US$ 13.333.20**
Project Period:	**12 months (03/2007-03/2008); 21 months (08/2008-05/2010) (2 Grants)**
Number of People Served:	**700 individuals**
Focal Area:	**Land Degradation**

Background

The villages of Murutholuwa, Bibila and Wewaththaawa of the Naula Divisional Secretariat division in Matale District were faced with many land degradation problems. The farmers in the upper reaches faced severe degradation of their land resulting in poor yields of their crops. Due to lack of land availability and rocky conditions of the land, farmers continuously used the same plots leading to further degradation and rapid erosion. The stream Bibila Ela providing water for cultivation for the farmers, flows down with little bank conservation or other measures to slow the flow, resulting in lack of moisture retention in the area. In the downstream, the farmers suffered from inadequate water for irrigation due to siltation by eroded soil washed down from the upper slopes. Paddy cultivation was affected the most due to lack of water. Of the 120 hectares that can be cultivated, only a few hectares could be cultivated, and that too with water collected in pools in the reservoir. The rest of the reservoir was silted.

Condition of the Murutholowa hill slope prior to the project

Objectives and Activities

The Naula Grameeya Sanwardhana Maha Sanghamaya (Naula Village Development Society - NVDS), recognizing the gravity of the situation which had a ripple effect on farming and livelihoods of villagers, initiated action to address the situation. The programme implemented on the Murutholuwa hill slope in the first phase involved 250 individuals. Working closely with the Land Officer of the DS office who provided the technical knowledge in designing the programme, a land parcel survey was undertaken as a first step. All cultivable land plots of the

Surveying of plots with farmers

households on the hill slope were surveyed. The plots needing land management measures such as live fences or traditional stone bunds were identified and the cost of construction of these were calculated with the plot owner. As measures to arrest erosion was requested by the farmers themselves, the activities had full participation of the community. The conservation activities for the hill slopes of Bibila and Wewaththaawa with 563 individuals were taken up in the second phase, along with stream conservation and de-silting of the Bibila Danvehara Reservoir. The activities had the consent of the villagers and the Farmer Organization (FO) which had the capacity to handle the work and the ability to get the attention of all relevant local government institutions. The de-silting and rehabilitating of the Bibila Danvehara Reservoir was given to the FO as they are the body responsible for water distribution to farmers each cultivation season and the maintenance of the reservoir. They also had the knowledge of where and what the urgent rehabilitation needs were, therefore it was considered the most cost-efficient and practical arrangement, by all stakeholders, with the limited funds in hand. Later, NVDS was able to raise co-financing by lobbying the local member of parliament to complete rehabilitation work.

In the land management work, surveying of plots was key for which a training was given to the farmers in using the A-frame for contour marking. The planting of live fences and installing of stone bunds along contour lines were advised, including in the rocky areas. Farmers were instructed to document all activities and include a map of the plot with the various conservation measures undertaken before and after implementation. Over 9,000 meters of stone bunds were erected and 15,250 meters of live fences were planted in Murutholuwa and Wewaththewa villages. In Bibila, 15,000 meters of stone bunds and 9,000 meters of live fences were established. Conservation of Bibila Ela (stream) was completed by planting 5000 trees and installing 50 checkdams at 10 meter intervals creating natural pools and increasing the water retention capacity of the stream. The labour for all activities was provided by the farmers in a voluntary capacity. In all three villages, fuel efficient stoves were promoted to minimize fuel wood consumption and felling of trees in conservation areas.

Fuel efficient stoves provided by the NGO

Lessons Learned and Sustainability

Conservation and management measures of farmer lands in rocky hill slopes successfully arrested erosion and thereby provided better managed land for cultivation with an increase in harvest. This in turn resulted in farmers ceasing to encroach on the forest to establish new plots for chena cultivation.

The stream conservation measures increased the water retention capacity of Bibila Ela which flows through the villages of Bibila, Murutholuwa and Wewaththaawa. The strengthening of the banks by planting trees on either side prevented erosion of the soil. The check dams built at intervals on the river greatly increased water retention capacity and groundwater recharge in the

Stone bunds as seen today

area. With measures in place to prevent soil erosion, the silting of Bibila Danvehara Reservoir was reduced. As a result of that the siltation of two small reservoirs/tanks i.e. Nalanda tank and Ebowala tank, located in the lower region which were fed by Bibila Danvehara reservoir also decreased. Farmers gradually adopted organic farming methods with the various training programmes conducted under the project. They continue to produce compost out of solid waste and use it in their cultivations.

The villagers of Murutholuwa, Bibila and Wewaththaawa maintain the live fences, the stone bunds as well as the check dams of the stream with dedication as they are measures they urgently needed to safe guard and ensure fertility of their farming land. The increase in harvest subsequent to this programme has encouraged the villagers to maintain them and improve where necessary. The visible changes experienced by these activities and the awareness programmes have made the villagers realize the necessity to protect their sloping lands, the catchment area and the reservoir. The change in the income and lifestyles due to the minimizing of land degradation and increased capacity of groundwater retention is a strong catalyst for the communities to continue with the conservation measures. The continuing support from the community for the activities was evident from the active participation of the villagers during impromptu visits made to monitor the programme.

Alternative Energy Sources for Empowering Fisher Women

Project No:	**SRL/SGP/OP5/STAR/CC/2013/01**
Grantee:	**Soba Kantha Environment Management and Community Development Foundation**
Location:	**Wilegoda – Dewinuwara, Matara District**
SGP Contribution:	**US$ 22, 834.00**
Cash Co-Financing:	**US$ 2, 818.00**
In-Kind Co-Financing:	**US$ 3, 999.00**
Project Period:	**19 months (12/2013 - 07/2015)**
Number of People Served:	**54 families**
Focal Area:	**Climate Change (Demonstration Project)**

Background

The fisheries sector plays an important role in the economy of Sri Lanka by contributing to livelihoods of more than 2.5 million coastal communities as well as providing more than 50% of the animal protein requirement of the people in the country. Approximately 50% of the population who resides in the coastal belt is directly or indirectly involved in the fishery industry. Socio-economists often tend to place the coastal fisher communities among the poorest of the poor, mainly on account of the uncertainties and vulnerabilities associated with small-scalesubsistence fishing undertaken by the majority of coastal fishers. These communities possess low level of education and are not skilled in alternative livelihoods. Many women in these fishing communities assist in post harvest activities and are often involved in dried fish production at the household level.

"Maldive fish" is the trade name given to processed tuna (mainly skipjack) as this product was introduced to Sri Lanka from Maldives. In the traditional method of dried 'Maldive' fish preparation in the Southern coastal belt, tuna is first boiled in an open stove, often using coastal vegetation such as mangroves as fuel wood. It was reported that approximately 0.24 tons of fuel wood per day is used by one household during the production process. In addition to the depletion of coastal vegetation, this mechanism entails substantial unintentional and indirect environmental cost in the form of CO_2 emissions. There is also a substantial waste of energy as a result of frequent interruptions due to rain.

Maldive Fish

Further, the use of fish drying rooms with open burning is dangerous, especially since small children can be directly exposed and women's dresses can easily be ignited by the fire. In addition to these negative effects, it is also a cumbersome process. Another often neglected area is indoor air pollution through combustion sources, which can be a serious health hazard for people using firewood for cooking, particularly in congested kitchens. It is established that there are around 370 chemicals present in wood smoke and amongst them are volatile organic substances emitted due to incomplete combustions.

Environmentally unfriendly use of firewood ovens

Objectives and Activities

Soba Kantha Environmental Management and Community Development Foundation (SKEMCDF), a rural women's organization, modified an intervention on energy efficient ovens to address the problems faced by women in fish drying. The project was built upon experience gained from previous pilot projects undertaken by SKEMCDF in working with fisher communities. The main objective was to reduce the use of wood-fired fish drying ovens by substituting them with energy efficient ovens utilizing wood shavings obtained from wood mills in the vicinity, a waste product which is typically burnt or dumped into river banks or near water ways.

Explaining the mechanism of the oven to beneficiaries

A group leader with her group members and shared oven

The project distributed 10 energy efficient and environmentally friendly ovens to 10 womens' groups, with each group made up of 5 beneficiaries established by SKEMCDF. The ovens as opposed to the previous method of sun drying, are efficient and convenient. Each women's group consists of five members who jointly put working capital, shared labour and profits in using an oven. Few of the members of the group are involved in marketing of the product to ensure the middleman is avoided. The average capacity of drying in a small oven is 150 kg of raw fish while the large oven has a capacity of 750 kg. Since the ovens were introduced and used by the women, the quality of the dried 'Maldive' fish has increased dramatically. The oven dried products are hygienically produced compared to the traditional method. The ovens have also enabled the women to save on time and effort, making the process of dried 'Maldive' fish production far more convenient and efficient than before.

Lessons Learned and Sustainability

The project assisted in introducing new technologies to produce better quality and hygienically sound dried 'Maldive' fish and to establish market linkages among the local community to ensure sustainability of livelihoods. All of the direct beneficiaries are women of whom eight are widows and six are disabled.

An impact assessment of the project showed significant and positive socio-economic and environmental impacts from the use of the energy efficient ovens. A calculation of specific carbon emissions associated with 'Maldive' fish production showed a 20% reduction in emissions with

Pollution of waterways

the introduction of the ovens, which adds up to avoiding 19.9 tons of CO_2 annually. The women do not use mangrove wood for fuel wood anymore, as they use saw dust which conserves approximately 4 hectares of mangroves a year. Furthermore, the project has been helpful in reducing the environmental hazard of large amounts of saw dust dumping into river banks, coastal areas or open burning by the 160 saw mills that operate in the district.

As a result of the project, the women groups have seen a reduction of LKR 1,891 (US$ 14.5) in production costs a month from not having to purchase fuel wood. Saw dust is available at no cost, at present. The use of energy efficient ovens using saw dust has also contributed to a 64% increase in household income of LKR 16,371 (US$ 126) for members per month. Prior to the project, the women incurred a 20% loss of fish due to the fish being carried away by stray dogs and crows, fly infestations and other unhygienic factors. With the use of the energy efficient ovens, a 33% increase in the quantity of high quality dried 'Maldive' fish is being generated. It has become the principal livelihood of 25% of the beneficiary households and the secondary or supplementary livelihood of approximately 68% of the rest of the households in the community. The community has also experienced increased social harmony among the beneficiary families and outside stakeholders such as fish suppliers and 'Maldive' fish buyers, as well as among other villagers.

Owing to the success of the project, additional funding was received in order to provide the technology to more women in Matara as well as in another district - Trincomalee. As a second step, value added products such as bottled chilli paste and 'Maldive' fish flakes are produced and sold at stores district-wide.

Greening the Smallholder Rubber Industry

Project No:	**SRL/SGP/OP5/STAR/CC/2014/15**
Grantee:	**Human and Environment Development Organization (HEDO)**
Location:	**Warakapola Divisional Secretariat, Kegalle District**
SGP Contribution:	**US$ 26,267.00**
In-kind Co-Financing:	**US$ 4,870.00**
In-Cash Co-financing:	**US$ 16,143.00**
Project Duration:	**17 months (7/2014 - 12/2015)**
Number of People Served:	**250 families**
Focal Area:	**Climate Change**

Background

Rubber *(Hevea brasiliensis)* is the second most important plantation crop in Sri Lanka in terms of export earnings and employment generation. The traditional rubber growing districts, including Kegalle, with suitable climatic and other conditions are located in Sri Lanka's wet zones. In the Kegalle District, the rubber industry is one of the main income sources where approximately 80% of the land cover is under rubber plantations. Of these plantations, more than 90% are small holders with less than 10 acres of rubber land under their possession.

The three main grades of natural rubber produced in Sri Lanka are Ribbed Smoked Sheets (RSS), Crepe Rubber and Centrifuged Latex. The effluent generated by such production contains 30-40% of rubber and 60-70% of serum substances. These serum substances contain amino acids, carbohydrates and plant growth substances with lactic acid which is formed in the latex. During the rubber sheet production process, the latex collected from rubber plants in the field is diluted and screened before the addition of formic acid for the coagulation process. The wet sheet is pressed to a thickness of about 3 mm and air dried initially. Thereafter, it is dried inside a smokehouse for 5-7 days at temperatures ranging between 50-650 ^{0}C. Finally, the sheets produced are classified for sale.

Traditional smoke house

Open hearth in the middle of a smoke house

Except for a handful of renowned large holder plantation companies engaged in rubber production, the small holders do not consider the environmental factors in plot maintenance or during the production process, mainly due to financial constraints and lack of technical know-how. For example, in the Warakapola local authority area of Kegalle District, where the project activities were undertaken, around 97% of the small holders use small centralized low energy efficient smoke houses for producing the sheets (RSS), which are darker and graded as Grade 4 and 5. These conventional smoke houses emit a considerable amount of greenhouse gases during the operation. They burn firewood and the effluent consists a large percentage of organic matter which is then released to the environment.

Further, the wastewater released from the rubber latex cleaning and coagulation process (serum), which is slightly acidic (pH < 4) is directly discharged without any cleaning and gets accumulated in the open land or in nearby streams and produce gases with extreme odors. This is a great threat to the biodiversity in the area, as the report on National Red Listing indicates that Kegalle

Small streams with endemic fish in the surrounding areas

A biogas unit established through the project

District harbours a higher number of threatened taxa.

Objectives and Activities

In this context, the Human and Environment Development Organization (HEDO), developed a project which has the following objectives: minimizing CO_2 emissions through the reduction of firewood usage by promoting energy efficient rubber drying houses, decreasing the water pollution in the area by controlling the release of effluent from rubber processing and using the effluent to produce biogas, and reducing the pollution of water sources in the area through maintenance of rubber plantations in an eco-friendly manner. The project was designed and implemented with technical support from the Rubber Development Department of the Ministry of Plantation Industries.

Initially, a baseline survey was carried out to identify the status of the smallholder rubber industry in the area covering 73 beneficiaries, including small scale rubber plantation owners, tappers, and smoke house owners. GPS coordinates of the rubber estates and smoke houses were recorded. Beneficiaries were grouped in the four CBOs based on the smoke house/s they used and each group was registered and a separate file opened to monitor their conduct.

A field excursion was arranged for a group of 28 rubber small holders and smoke house owners to explore a properly managed and self-sustaining rubber smoke processing center in the district, which produces 1st Grade sheet rubber and a rubber estate which uses rain guards. Two field excursions were made to explore an energy efficient rubber drying house with the participation of 15 and 12 beneficiaries per visit respectively. A training programme on mushroom cultivation was organized for 20 beneficiaries.

HEDO, with the assistance of the community, converted five smoke houses into energy efficient rubber drying houses which operated from waste saw dust. These drying houses have many advantages over the conventional smoke houses. Most important of them is shortening the production time into one day from four to five days. As a result, the vast amount of CO_2 emitted in the production process was drastically reduced. Further, these efficient drying houses enabled the beneficiaries to reach higher quality in rubber sheets, earning them higher incomes.

HEDO introduced biogas technology to the rubber small stakeholders to convert the environment hazard into profits. Two bio gas plants were built as models which generate biogas from effluent discharged from the processing of rubber sheets (200 - 350 L/day) as well as house hold wastes. According to the reports of the biogas consultant, these plants digest the organic matter in the effluent and reduce the COD level to 63% and BOD level to 44% while the pH levels increase

Introduction of rain guards

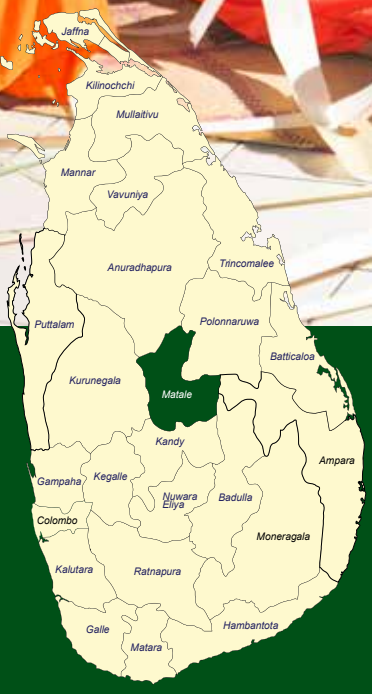
to 6.4. Further, the wastewater discharged by the plant is purified in a purification chamber consisting of several layers of filtration media.

HEDO introduced other technical know-how to 10 selected members of the small scale rubber plantation community, one of which was providing 2,800 rain guards for rubber trees. These guards assist in maintaining the rubber latex collection during the rainy season and thereby contribute to a higher production. Yet, the tappers who are daily laborers find this an encumbrance and therefore need to be motivated. Another initiative was to promote organic rubber cultivation with selected farmers. This is promoted with the Rubber Development Department to expose the small holders to new markets which would bring them higher incomes.

Two national level workshops were conducted to share experiences with policy makers and Government and private sector institutions. Mushroom cultivation was introduced as an alternative source of income to the small holder rubber planters. A revolving fund was established with a loan facility to start livelihood activities. A national level bank has agreed in providing assistance to the small holders in enterprise development.

Lessons Learned and Sustainability

Regional small scale rubber planters and tappers were motivated through this project to produce high quality sheet rubber using ecofriendly technologies. Although efficient smoke houses and biogas plants were established as demonstration models with community participation, HEDO had to overcome negative factors such as market monopoly, price fluctuations and reluctance by tappers to use the introduced rain guard system. During this period, the price difference between the Grades RSS 1, RSS 3 or RSS 4 was reduced, which generated the view that investing money for modifying smoke houses to produce RSS 1 Grade rubber was not profitable. HEDO had to promote and create awareness of the advantages such as fuel efficiency and health benefits. The project demonstrated that continuous awareness programmes with visits to obtain hands-on information motivated the community to adopt new technologies. Introduction of alternative livelihoods such as mushroom cultivation empowered the community to overcome financial difficulties during market fluctuations as well as in the rainy season, when the rubber tapping is not taking place.



Preserving the Traditional Craft of Ola Leaf Inscription Production

Project No:	**SRL/SGP/OP5/STAR/BD/2014/16**
Grantee:	**Rangiri Thakshana Piyasa**
Location:	**Maningamuwa GN Division, Matale District**
SGP Contribution:	**US$ 30,600.00**
In Cash Co-Financing:	**US$ 5,215.00**
In –Kind Co-financing:	**US$ 26,075.00**
Project Period:	**25 months (07/2014 – 08/2016)**
Number of People Served:	**56 households**
Focal Area:	**Biodiversity**

Background

Palm leaf inscribing is one of the oldest mediums of writing in South and Southeast Asian countries including Sri Lanka where a variety of manuscripts on subjects such as Buddhism, Astrology, Medicine and History were inscribed to preserve them for posterity. Popularly known as Ola leaf inscription, it has a long history in the island. In the 1st century BC, during the fifth Buddhist Council held at Aluvihara in Matale, around 500 monks inscribed the words of the entire Buddhist Canon 'Tripitaka' in the Pali language on Ola leaves in order to preserve the teachings of the Buddha. Further, physicians over centuries etched prescriptions and other curing procedures on Ola leaves to preserve and protect them from extinction. These old 'Veda Poth' (medical manuscripts) are treasured through generations to facilitate the study of long-established practices. A considerable number of these manuscripts have been completely destroyed, while the rest is fast deteriorating due to natural as well as man-made reasons. Thus, it is vital to conserve and preserve this valuable storehouse of knowledge for the use of future generations.

Selection of Talipot palm leaves for processing

Ola leaf inscription

Writing on palm leaves is a skilled endeavor which requires patience, practice and training. At present, very few people know the technique of writing on palm leaves. This tradition has almost come to an end and is preserved within a handful of Buddhist temples around the country. Added to this is the fact that people no longer understand what is written on the palm leaves and as a result a most valuable resource and traditional knowledge base is being lost forever unless appropriate actions are taken to preserve this important cultural practice.

Most Sri Lankan Ola leaf manuscripts are written on the Talipot palm leaves (***Corypha umbraculifera)***. It is one of the largest palms found in Sri Lanka and grows to a height of 15-35 m. Today, the main use of the Talipot leaves is in making handicrafts such as fans, mats, umbrellas, baskets, wicker trays and for thatching.

Objectives and Activities

Rangiri Thakshana Piyasa, a CBO managed by Venerable Galahitiyagama Dammarathana Thero, the Chief Monk of the Maningamuwa Temple undertook the challenge of preserving the traditional Ola leaf inscription culture within Matale District. This work was combined with improving the livelihoods of the community, especially low income women through popularizing handicraft making from leftover Talipot leaves utilized for manuscript production. As the initial step, the CBO collected unutilized Ola leaf manuscripts and ancient tools used for writing, such as the metal stylus from temples and people in the area.

These items are presently on display at the Ola leaf art gallery and bamboo craft centre jointly operated with a GEF-SGP partner organization of the district involved in bamboo handicraft production. To obtain the different raw materials required for the preparation of Ola leaves, 5,000 plants of Papaya *(Carica papaya)*, Pineapple *(Ananas comosus)*, Mee *(Madhuca longifolia)*, Kakuna *(Canarium zeylanica)* and Talipot Palms *(Corypha umbraculifera)* were grown within a 2 ha extent of the temple garden. The trees are being looked after by the temple with the assistance of community members.

The project trained 156 student monks and lay people in four monasteries on Ola leaf preparation and writing. Since they are attached to several temples and organizations in the area, the knowledge gained will be utilized for the conservation and dissemination of the traditional knowledge base. Twenty lay persons and monks are now able to produce Ola leaves when the demand arises. Further, over 1,000 school children were made aware on the art of Ola leaves inscribing and the value of preserving ancient manuscripts. Indigenous traditional health care practices in 100 Ola leaf manuscripts were translated into Sinhala and published in a book titled "Sri Lankan Medicinal Practices Scripted in Ola Leaves" of which 2,500 copies have been distributed.

Women engaged in handicraft making from leftover Ola leaves

Fifty six women of low income households were trained to make handicraft products utilizing leftover palm leaf cuts, under the supervision of a professional instructor from the National Handicraft Center 'Jathika Shilpasaba', established under the Ministry of Small Industries. The group is now registered as a women's society in the Divisional Secretariat of Pallepola and the National Handicraft Center. As a result, they get the opportunity to participate in trade fairs and the members can obtain loans from a rural development bank. The products are on sale at the Ola leaf art gallery. A business plan was prepared for the Rangiri Craft House, where plans for sales, production, management and finances were addressed. The established raw material supply chain through the community ensures a constant raw material supply. The group plans to increase their sales through purchases at sales outlets situated in popular tourist destinations such as Kandy and Matale. At present, they can produce up to 30 items from Ola leaves and their household income levels have increased by LKR 10,000 per month.

The CBO participated in a traditional food fair organized by the Biodiversity Secretariat of the Ministry of Mahaweli Development and Environment, where participants gained knowledge and awareness on traditional food preparation techniques. The objective of this exhibition was to conserve traditional food and popularize traditional food varieties through community participation. The experience opened doors for women with knowledge in traditional food preparation to display their skills.

Young monks trained in preparation of Ola leaves

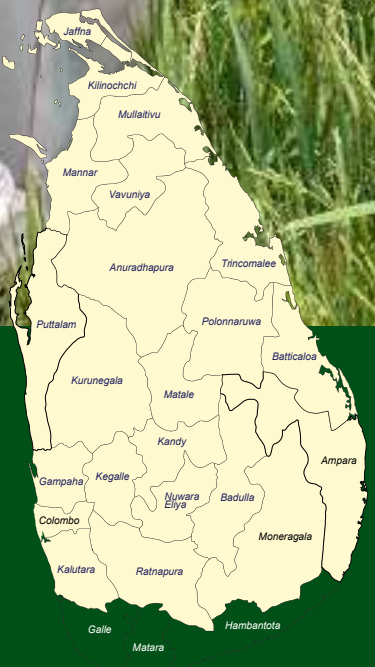
Lessons Learnt and Sustainability

This initiative filled an important gap in preserving the traditional knowledge base in Sri Lanka and acted as a venue for its transmission to the next generation. Trained student monks attached to various temples in Matale district will utilize the knowledge gained to continue Ola leaf preparation and inscription. The community willingly participated in project activities as this project is headed by the Chief Buddhist Monk of their village temple. High community participation was seen especially in planting and maintaining the plants within the temple grounds for extracting raw materials needed to prepare the Ola leaves.

All beneficiaries were selected for handicraft making from the community using beneficiary selection criteria such as being unemployed and in the low income category of the village. Some were differently abled. For Ola leaf writing, monks or community members from the Matale District who were willing to engage in the craft and grow the necessary trees needed for the raw materials in their home gardens were selected.

Handicraft production utilizing the leftover palm leaf parts has created 10 direct and 50 indirect employment opportunities for low income women. The average monthly income of LKR 8,500 (US$ 57) earned by the beneficiary households, exceed the official poverty line for the Matale District of LKR 4,240 (US$ 28) of the Department of Census and Statistics.

The partnership formed with another GEF-SGP partner NGO in the area has been a win-win situation as the handicrafts on display at the crafts centre located in a central location on a main arterial road attract more customers and thereby increase the sales. The project provided a proactive approach in supporting gender equality and women's empowerment through providing sustainable livelihoods to marginalized women members. The linkages established with the National Handicraft Center was vital in improving the quality and obtaining a continuous market for the products.



Purifying and Conserving Traditional Rice Varieties

Project No:	**SRL/SGP/OP4Year2/RAF/08/04**
Grantee:	**Practical Action**
Location:	**Galle, Matara and Hambantota Districts**
SGP Contribution:	**US$ 25,000.00**
Cash Co-Financing:	**US$ 24,544.00**
In-Kind Co-Financing:	**US$ 9,693.00**
Project Duration:	**25 months (02/2009 – 03/2011)**
Number of People Served:	**350 farmers**
Focal Area:	**Biodiversity**

Background

The long history of rice *(Oryza sativa)* cultivation in Sri Lanka is evident by the presence of endemic cultivars, wild relatives and land races. In the past, the Department of Agriculture in Sri Lanka has made efforts to purify some land races to establish a set of pure-line varieties. In the recent past, there have been concerns raised on the potential of losing traditional land races/ varieties through negligence, the passage of time and modernization. Regrettably, there is no detailed documentary evidence in the recorded history of over 2,500 years of the varieties of rice/ paddy cultivated in Sri Lanka, the staple food in the island from ancient times. Sri Lankan farmers had developed a large number of land races of rice with different characteristics over centuries. It was only at the beginning of the 20th century that more than 300 indigenous varieties were identified and made known to people as indicated in the 2014 publication by Abeysekra et al on antioxidant properties of some Sri Lankan traditional red rice. Most of these were small-seeded samba varieties (e.g. Muthu samba, Puwakmal samba, Molagu samba, Suduru samba, Suwandel, Kurulutuda, Panduru wee, Ma wee and Podi wee), some had a high degree of specialization as round grains, some were of different maturity groups and some were known for their good cooking qualities.

A traditional rice variety

Some other rice varieties that were commonly cultivated in recent history are, Honderawala, Suduheenati, Sinnanayan, Rathkarayal, Kaluheenati, Pachaiperumal, Dahanala, Murunga, Vellai-illankalayan, Perillanel, Oddavalan and Vellaiperunel. These varieties were considered photoperiod insensitive and could be cultivated in both 'Maha' (October-February) and 'Yala' seasons (March-September), depending on the availability of water. The flood-tolerant local landrace Dewareddiri (5 months) and the salinity-resistant Pokkali (4 months) were cultivated in the southwest coastlands. El-wee was grown in the terraced fields of the hill country and Galkanda, Panniti and Naruwee were grown at higher elevations in the cooler climates. Dikwee was a popular variety in the dry uplands. These varieties have met many consumer preferences such as taste, aroma, grain size and grain quality. They exhibited varying growing lengths to suit the environment, reflecting the acumen of the Sri Lankan farmer.

A range of traditional varieties of paddy, suitable for an array of different climatic and soil conditions, still exist and are cultivated. However, they are not properly isolated at research stations. As a result, the traditional varieties grown at farmer level have mixed characters, their planting material includes impurities such as weed seeds and inert materials (based on how the seed paddy production was done) and low germination rate. Hence, characterization and purification of traditional rice varieties are imperative to popularize them at the national level.

Objectives and Activities

The objective of the project was to identify, characterize and conserve suitable traditional rice varieties for the 'low country' of Sri Lanka i.e. altitude below 300m. The long term goal was to build a system of farmer-based seed paddy production as a means of supplying quality seeds

among the farming population. The methodology adopted was to collect the land races grown by farmers, identify, preserve and multiply them. In this regard, 30 farmer families were selected as project beneficiaries in selected locations of Galle, Matara and Hambantota districts (Southern Province) of Sri Lanka. Demonstration plots were set up and regular training was conducted to motivate farmers to grow and preserve the traditional varieties.

Paddy grown under the project

Thirty traditional rice varieties were collected from the farmers and a resource pool was created by establishing them at one of the fields of a selected farmer. This activity was undertaken by the Farmer Federation for Conservation of Traditional Seeds and Agriculture Resources (FFCTSAR) in collaboration with the officers of the Department of Agriculture (DOA). The farmers' descriptions of the collected landraces based on agronomic and adaptation characteristics of farmer experience with landraces were recorded. Information such as the season of cultivation, land extent, date, location, 'yaya' (plot) name and name of the farmer who cultivated the landrace were documented. The landraces were carefully numbered for future identification and a register was maintained for the said purpose. A sample of adequate size (5 kg) was purchased and sealed in a bag and stored for future use. A weed-free paddy field was selected for the sample collection. This activity was carried out under the supervision of the project manager and advice received from a Scientist at the Plant Genetic Resources Center (PGRC) in Peradeniya.

The process of conservation followed several steps; the first was purification and characterization. In order to create pure lines, the collected samples were grown in isolated plots. Care was exercised to prevent out-crossing, which was at a low rate (2 – 3%). After two seasons, the pure lines of each land race were obtained. These purified traditional rice varieties were made available for seed banks and ultimately to the farmers. The second step was multiplication, production and conservation of these traditional rice varieties, which was undertaken by selected farmers ('seed farmers'). The initial purified seeds were provided by the project. When the production of each traditional variety reached 100 kg per season, they were collected and made ready for distribution. Sustenance of this activity depended on the demand as seed paddy and human consumption. The third step was the evaluation of the traditional varieties where a list of traditional rice varieties with specific characters was made. An evaluation report was prepared using the information gathered.

The fourth and final step was development of a national seed production system for traditional rice varieties. A network of farmers who were well-informed on the importance of producing and maintaining the purity of landraces was established. Demonstration plots were set up in the Southern Province and training and education programmes for rice farmers were conducted to motivate them to grow and preserve traditional varieties. All activities were carried out under the guidance and the strict supervision of the PGRC Scientist who was the main advisor for the project.

The final output of the project was the availability of 10 traditional paddy varieties, which were characterized and purified for the farmers. The network of traditional seed paddy producing farmers spread to 12 other districts within the project period. Three farmers represented each district as seed paddy producers. Local availability of seed paddy has not only minimized the transportation cost of planting material from distant locations but also ensured that paddy varieties suitable for each district are available within the district. This network offered an essential service in providing knowledge and information on the procedure of seed paddy production. During the latter part of the project, a vast potential emerged in the Northern Province, especially among those farmers who returned to their lands after the conflict was over and started cultivating their paddy fields. For farmers in three District Secretariat (DS) Divisions in the Northern Province who faced a severe shortage of seed paddy, the project was able to provide 1,200 kg of the traditional paddy variety "Beheth heenati". 21 farmers from Jaffna in the Northern Province visited Bundala in the Southern Province in a north-south farmer exchange to share knowledge and experience. Northern farmers obtained traditional seed paddy from their Southern counterparts in Bundala. As a final step, a database of traditional seed paddy producing farmers was set up.

Lessons Learned and Sustainability

A simple cost benefit analysis confirmed that conventional paddy cultivation with agrochemical inputs is not profitable for small scale farmers in Sri Lanka. As a result, farmers in many areas are shifting to traditional paddy varieties. The traditional rice varieties have started capturing a market demand and are fetching premium prices. Hence, the demand for seed paddy of the traditional varieties has increased several fold. Further, in areas where paddy fields have become non-arable due to changing climatic conditions, traditional paddy farming is becoming a viable option. Local fair trade organizations such as "Ranketha", Rural Enterprise Network (REN), "Rural Returns" and "Bio Foods" have made pre-trade agreements with traditional paddy producers and a procedure for certification is underway. New buyers are emerging with local and international demand. Ruhunu Development Bank, a provincial development bank in the Southern Province of Sri Lanka, has developed a specific loan scheme for small scale traditional paddy farmers with a 7% interest rate and flexible procedures.

A combination of local knowledge and modern scientific seed production technology can result in improved production systems suitable for local conditions. Although not entirely new, farmers are currently producing their own seeds and depend on locally grown seed in the absence of commercially available certified seed paddy. Quality seed paddy production among small-scale paddy farmers could be enhanced with the introduction of correct seed production technology. On-farm seed production is a valuable alternative for total farmer dependence on commercially available certified seed paddy. The locally available seed systems and seeds of landraces provide opportunities to preserve the local seed varieties and improve their supply for cultivation. Networking of traditional seed paddy producers and linking them with prospective buyers have yielded positive results and prevented the production of low quality seed paddy. To obtain the expected outputs, traditional seed paddy locations were expanded to cover additional districts covering both dry and arid conditions. This was done as a remedial measure for the yield losses in original locations due to flash floods and droughts.

Empowering Differently Abled and Marginalised Youth through Eco-Friendly Practices

Project No:	**SRL/SGP/OP5/STAR/BD/2014/24**
Grantee:	**Y Generation**
Location:	**Western and Southern Provinces, Sri Lanka**
SGP Contribution:	**US$ 40,742.00**
In Cash Co-Financing:	**US$ 2,726.00**
In-Kind Co-Financing:	**US$ 1,536.00**
Project Duration:	**22 months (09/2014 – 07/2016)**
Number of People Served:	**165**
Focal Area:	**Biodiversity**

Background

Individuals with physical or cognitive disabilities are often the most disenfranchised and marginalized within underprivileged communities. In addition to tackling poverty and disorders, such persons are rarely provided with opportunities for progress as they remain a voice unheard. Embellished with the label 'disabled', a term commonly used in mainstream media and society, their differed abilities are undermined and rarely considered for capacity development or as those with change agent potential. The term 'differently abled' in itself denotes the possibility of contributing through differed means, which directs society to view them positively and as actively engaged participants.

The Department of Census and Statistics in Sri Lanka states over 1.6 million of the population in 2012 comprised those with disabilities in vision, audibility, cognition, mobility, self-care and communication. Although the rate of 87 differently abled persons per 1,000 individuals may seem inconsequential, it still denotes a segment of the total population which requires assistance and understanding. Despite the limited resources available in the country, efforts are being made to encourage inclusivity for the differently abled and to provide opportunities to gear them towards independent livelihoods. Replacing the term 'disabled' with 'differently abled', with the hope of de-stigmatizing and evoking positive attitudes among the people is also being undertaken.

Objectives and Activities Undertaken

Upon identifying the necessity of inclusion, Y Generation, a Non-Governmental Organization aimed to introduce eco-friendly practices through horticulture therapy, as a means of empowerment for differently abled youth. The three identified groups were, those with auditory impairments, cognitive impairments and special needs. Three specific institutions were consulted during the project conceptualization, namely, the Southern Province Deaf Association, National Institute of Mental Health (NIMH) and Chitra Lane School for Special Children, where the project activities were carried out with selected beneficiaries.

At the outset, the activities were tailored to suit the needs of each institution. Organic home gardening was considered the main project activity, which provided diverse benefits to the differently abled youth and their families. It provided both beneficiaries and volunteers with the opportunity to learn to maintain a productive garden with the use of organic compost and fertilizer for which training was provided.

Beneficiaries from the Southern Province Deaf Association with their crops

In the first location at the Southern Province Deaf Association center in Hikkaduwa, the main activity was to cultivate a previously uncultivated land area of 1,509 m^2. Audition impaired individuals were trained to maintain vegetable crops of eggplant, okra, pumpkin and chilli with the assistance of Y Generation volunteers. Together, they created a lush garden. A land

area was also demarcated to promote recycling of decomposable goods and the production of compost manure.

Natural pesticides such as worm-wash was introduced and later used for the crops. Fifty members were in charge of maintenance of the home garden at the association's premises, while 10 home gardens were established in the homes of selected members. The harvest of the garden at the premises was sold at the association outlet and the money deposited in the association fund. The crops grown in home gardens were either sold to earn an income or used for consumption.

A patient from the Forensic Psychiatric Unit engaging in gardening

In the second location, the pre-existing Horticulture therapy program at the Forensic Psychiatric Unit at NIMH was further facilitated by converting the 604 m^2 area into a productive vegetable garden. This provided patients with the opportunity to cultivate organic vegetables such as cabbage, bitter gourd, pumpkin and eggplant using organic fertilizer and compost. In addition to its therapeutic value, the practice of gardening was expected to facilitate the patients' livelihood skills during the post-recovery period. Much of the crops produced were used for consumption, while in rare occasions, such as the 'Open Day' held in lieu of World Mental Health Day, the crops were sold to outsiders at a nominal price. Since the unit comprises patients suffering from psychosis such as schizophrenia or drug/alcohol addiction, 40 selected long-term patients were involved in the gardening activities under the supervision of two members of the support staff and the Head of Nursing. The gardening activities acted as incentives towards the recovery process, while it simultaneously enabled the volunteers to look beyond the stigma attached to the patients, creating a positive association towards them. The project also initiated a library at the rehabilitation unit of the Forensic Psychiatric Unit, which provides patients with an outlet to engage in recreational activities within the unit.

The Chitra Lane School for Special Children, located in the urbanized precincts of Colombo 5, consisted of limited space to grow a home garden. Owing to this, the air plant method was used to grow organic green leaf vegetables such as ***Centella asiatica***. The produce was used by the school kitchen, which provides hot meals to underprivileged students. In addition to the vegetable garden, a butterfly garden was created adjoining the pool area of the school to add more color to the premises. The volunteers used 43 plant species which act as larval food plants or

A butterfly seen at the Chitra Lane special needs school

nectar plants to attract certain butterfly species found in urban areas. This created a breeding ground for a variety of butterflies, a phenomenon deemed impossible due to the limited space and built environment of the school premises. It was also used as an observation site during science lessons where students were able to witness the life cycle of the butterfly unfold in front of them. Boards with pictures and large lettering depicting the life cycle and various butterfly species were also implemented during the project period, which assisted in teaching the students.

Fifteen selected students from the senior section of the school, capable of carrying out the necessary activities, were involved in maintaining the vegetable and butterfly gardens. The tasks were carried out with the assistance of Y Generation volunteers who visited the school weekly, gradually building rapport with the students. Most importantly, the gardening activities such as fertilizing, watering, weeding and plucking vegetables facilitated the coordination of fine motor skills of the students and eye-hand coordination. Children with Down's Syndrome and Autism generally find difficulty in motor skill coordination and most special needs school activities revolve around its improvement. As described, the gardening activities provide ample exercise and practice in coordinating hand eye movements.

Lessons Learned and Sustainability

The rapport building and interaction with the volunteers provided a good opportunity for the beneficiaries in all three locations to experience interaction with outsiders previously unknown to them, which is an integral step in learning to function independently. The volunteers too, who had no prior experience working with the differently abled, understood the baselessness of the stigma attached to such persons through interactions. They have now become advocates for the differently abled, encouraging fellow youth volunteers to appreciate such persons for their different abilities.

The students from Chitra Lane special needs school tending to their plants

Despite the success and acclaim during the project period, certain challenges which were encountered can be taken note and addressed in similar future efforts. Sustainability was noted as a key challenge since the volunteers were university undergraduates during project inception with time to spare for volunteering, but by the end of the project, upon graduation, volunteering became a difficulty owing to work schedules. This led to a loss in skilled and experienced volunteers and the rapport built with the differently abled youth was retracted. As all three institutions have limited staff, the presence of volunteers was necessary to effectively continue the assigned activities. In certain instances, lack of institutional support was noted as a drawback, as it discouraged beneficiaries from participation. In order to overcome these challenges, it is recommended that long term partnerships with volunteers be created, with specific volunteers assigned to each site based on availability, in order to facilitate the continuity of activities.

Organic Tea Production for Biodiversity Conservation and Soil Protection

Project No:	**SRL/SGP/OP5/STAR/BD/2013/08**
Grantee:	**Nature Resource Conservation (NRC)**
Location:	**Baddegama Divisional Secretariat, Galle District**
SGP Contribution:	**US$ 49,480.00**
Project Period:	**19 months (01/2014 - 07/2015)**
Number of People Served:	**25 families**
Focal Area:	**Biodiversity**

Background

Sri Lanka is world renowned for its good quality tea. The industry was first introduced to the country over one and a half centuries ago. At present, tea is grown in the central highlands as well as in the southern regions of the island. The tea sector is important to the national economy in terms of foreign exchange earnings and securing livelihoods of people, while contributing to approximately 1% of the country's Gross Domestic Product (GDP). Tea plantations are categorized into two major production sectors, the estate sector and the small holder sector according to the extent cultivated, and, according to elevation, they are broadly categorized as 'high grown' ranging from 1,200 m upwards, 'medium grown' covering between 600 m to 1,200 m and 'low grown' from sea level up to 600 m. All qualities and tastes have a market around the world.

A tea small holding is defined by the State as having an area less than 20 ha in tea cultivation. However, tea small holdings contribute to 73% of the annual tea production. Plantation estates and small holders are usually gauged on productivity terms, but not on sustainability terms of the production sector. The tea industry is known for its high application of chemical fertilizers since agrochemicals are used throughout the growing cycle of the tea plant. It has given rise to numerous long term negative environmental impacts. These include pollution and degradation of soil productivity, which in turn becomes a financial burden as the cost of fertilizer applications,(approximately 8-12% at present) keep increasing.

Tea leaves ready for harvest

Currently, the industry is facing many challenges such as low levels of productivity, rapidly aging tea bushes, high input costs, worker shortages, maintaining Sri Lanka's reputation as a high quality tea producer/ exporter as well as having to meet new and stringent sanitary, environmental, social and other standards set by the importing countries.

A small holder tea plantation in Baddegama

In this regard, organic tea farming can be considered a suitable alternative for small holders to overcome some of the challenges. It is a way of ensuring healthy produce and improving the livelihood of farmers while conserving the environment. Yet, there are constraints for adopting organic farming within the tea industry. Unavailability of organic manure on a regular basis, high initial costs in converting to organic practices, high costs for certification and poor farmer awareness are some of them.

Objectives and Key Activities

This project was an initiative of Nature Resource Conservation (NRC) aimed at preserving biodiversity by practicing organic farming concepts and enhancing the livelihoods of tea small holders. The project was located in Baddegama, Galle District, an area where small holders cultivate 'low country' tea in home plots conveniently situated in close proximity to their vegetable and paddy growing lands. The extent of the tea land covered by the project is approximately 7 ha of organically grown tea owned by 25 farmers who, prior to the project, had been using chemical fertilizers and synthetic weedicides for a long period of time which had negatively affected the land and soil quality and the biodiversity of their lands and the surrounding areas.

A baseline survey was conducted covering the 25 families selected for the project activities. The project location was mapped using GPS technology. Each farm plot was surveyed and land use maps were prepared with the support of the Natural Resource Management Centre (NRMC) of the Department of Agriculture. The beneficiaries were chosen based on criteria such as site location of tea plots, the socio-economic status, with priority given to unemployed persons. More female beneficiaries were selected to engage in handmade tea processing activities.

The beneficiaries were provided with awareness training on preparation of compost, land designing, soil conservation practices, crop management, integrated pest management, tea pruning and plucking methods, livestock management and value-added handmade tea production. The president of NRC, being a patent holder for hand-made tea production, had the necessary knowledge to process hand-made tea. The farmers were also educated on the negative effects of using chemicals as well economic and health benefits achieved through organic cultivation. Organic farming, value-added handmade tea and home gardening were introduced as new income generating opportunities to sustain the livelihoods of the farmer community. Stone bunds and live fences using *Gliricidia cepium* were established according to the advice given by NRMC to minimize soil erosion in the tea plots.

Lessons Learned and Sustainability

A recent analysis has shown that rainfall and maximum air temperatures in the Galle area have been erratic over decades and the mean air temperature during January to April has increased. Organic agricultural systems can make vulnerable farming communities more resilient to the adverse weather effects of climate change, sequester more carbon into soil, use less water and reduce soil erosion and nutrient run off. With the reduction of agrochemical use, the biodiversity of the area also improved, demonstrating that organic tea cultivation is a sustainable strategy to conserve biodiversity and soil properties.

A research study undertaken in 2015 by a university student, evaluated the biological and chemical parameters in soils exposed to both organic and conventional practices in Baddegama village (the project area) using 23 beneficiary families as the study sample. The results indicated that both parameters improved significantly in soils exposed to organic cultivation; see Table 1 below The enhanced biological activity in organic soils could be attributed to the improved levels of carbon and nitrogen.

In another study, growth and yield of 20 organically maintained small tea holdings from this project of extents below 0.5 ha were compared with that of conventionally grown tea lands in the Baddegama area. Organically managed tea showed better ability to adapt to drought conditions and exhibited healthier plants, better recovery after pruning and higher yield responses (i.e. higher green leaf per ha basis) compared to that of the conventional tea system. Moreover the physio-chemical parameters of soil retention and nitrogen and carbon content were more positive in the organic tea plots. Biological parameters such as earthworms, biological activity

and arthropods in the soil were significantly higher in the organic plots. From the economic data too, it could be established that the cost benefit ratio of tea production for the small tea holders was higher in the organic plots.

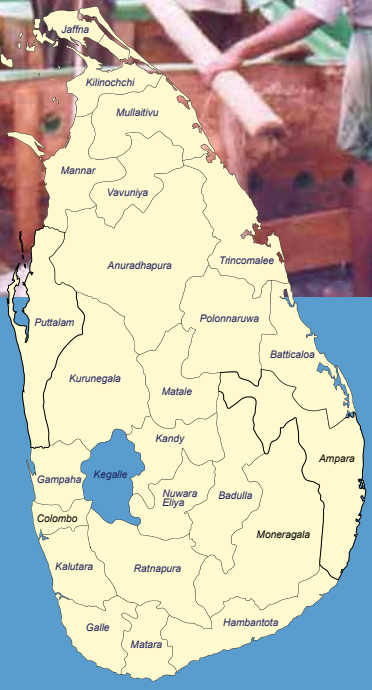
Biodiversity amidst the tea plantations

Indicator	Organic practices	Conventional chemical application
Mean earthworm population (0-15 cm) per ha	9.66×10^5	1.09×10^5
Mean microbial activity (mg/day/10g of soil)	5.20	3.90
Mean pH	4.78	4.65
Mean Carbon content (%)	2.37	1.57
Mean Nitrogen content (%)	0.20	0.08

Table 1: Comparison of organic and conventional chemical applications (Thathsarnee et al, 2015)

In the home garden component, a marketing network was established for beneficiaries to sell produce from home gardens. A percentage of the profit (10%) from sales is set aside as a contribution to the community based organization (CBO).

The important lessons learnt from this project are that organic green tea could be sold at a higher price and can be processed manually in a central processing unit to produce value-added handmade tea. This process requires commitment from all involved and the constant support in technical inputs. It is a new enterprise to the village community compared to the conventional tea processing method, requiring continuous monitoring and direction as well as the involvement of the private sector to ensure that the initiative is sustained by ensuring a cost-effective market for value-added handmade tea.



Safe Drinking Water for Uplifting Lives of Epalawa Village Community

Project No:	CWI/SRL/05/06
Grantee:	Community Development Centre, Aranayake
Location:	Epalawa GN Divsion, Kegalle District
SGP Contribution:	US$ 20,520.00
In-kind Co-Financing:	US$ 3,928.00
Project Period:	12 months (03/2006 – 03/2007)
Number of People Served:	150 families (Approx. 750 people)
Focal Area:	Climate Change Adaptation (Community Water Initiative)

Background

Epalawa village located in the Aranayake Divisional Secretariat of the Kegalle District is situated in the upper reaches of a mountain. Due to it remoteness, most government services including a clean drinking water supply, have not reached the village community. Local Government authorities made several attempts to provide water for the community but was unable to proceed beyond the discussion stage. Eventhough the annual rainfall for the area is between 2,500 to 3,000 mm, the village faces difficulties in obtaining water for drinking and agricultural purposes. Deforestation of the surrounding mountain range led to drying out of groundwater sources. A few wells available in the area are insufficient to meet the needs of the community, compelling the villagers to travel long distances to obtain water. The women spend two to three hours a day to collect water and school children face difficulties in the morning by not having a proper water supply. Added to this is the fact that the majority of the community is living below the national poverty line.

Objectives and Activities

The main objective of this initiative implemented by the Community Development Centre (CDC) in Aranayake was to provide safe drinking water for households in the Epalawa village by bringing water from the stream below to the hill top, where the houses are located. Other objectives were to improve the health and sanitation facilities, home gardening improvement through organic farming methods, strengthening the community based organization (CBO) of the village and providing necessary knowledge on water management.

As a first step, an intake tank was constructed close to the stream to divert some of the stream water flow into the tank. This ensured that the regular flow of water used by communities on either side of the stream was undisturbed. The water had to be pumped up 3kms to a tank at the top of the hill from where the water is redistributed through a pipe system to the houses.

The CDC initially had to motivate and mobilize villagers to make a cohesive unit of the disintegrated community. Meetings were held with leaders of the village to get the project moving. This was a challenging task as the people were dissatisfied by broken promises of local politicians and government officials. Yet the perseverance of CDC led to the establishment of the Epalawa Water Committee with 110 members. A member of the committee donated the land to build the stock tank on the hill top.

The intake tank constructed by community members

Among the challenges faced in constructing the intake tank near the stream, was hitting a rock after 4 feet of excavation and this resulted in spending additional money to demolish the rock. The committee members and their families' motivation was held high even when they had to spend a large number of days digging the 3km uphill drain at 2 ½ feet depth to carry the water pipe from the intake well to the stock tank. They proudly claim that the labour donated by the committee members and their families for this project has been calculated to be approximately 70,752 man hours, valued at over LKR 3, 000,000.00.

Yams cultivated in home gardens

With water availability, the project could initiate and improve home gardening, which led to savings on vegetables bought at the market. Selling the excess produce became an additional income source to the households. Hundred home gardens and a community garden covering 10 ha in extent were developed under the project. Training was provided on composting and vermiculture methods as well as kitchen management. The women cultivated traditional yam varieties in the gardens which can survive drought conditions. They were a source of nutritious and wholesome food for the family. The women also experimented with different value added food items made with the yams for sale.

The establishment of women's small Self-help Groups also contributed to more economic opportunities and increased savings to women. The Self-help Group of 20 members initiated a revolving fund scheme. They used the loans to improve and repair their houses and enhance livelihoods. The majority of the members' spouses are blacksmiths so some of the loans were utilized to improve their small businesses. Most of the women in the village improved their self-employment initiatives. They improved or initiated home based enterprises such as sweetmeat production, making handicrafts, tailoring, peddling and selling vegetables.

Capacity building of the members of the community, especially the women, was one of the most important aspects of this project. The confidence gained in doing a project that was abandoned by official agencies and successfully completing it by the village community organization was immensely important to them. The village committee is now active in conservation of the catchment area and in soil conservation and is an epitome of a "Best Practice" in village conservation work. Three persons from the Water Project Committee got the opportunity to join the national NGO "Lanka Jalani" for training in capacity building and leadership.

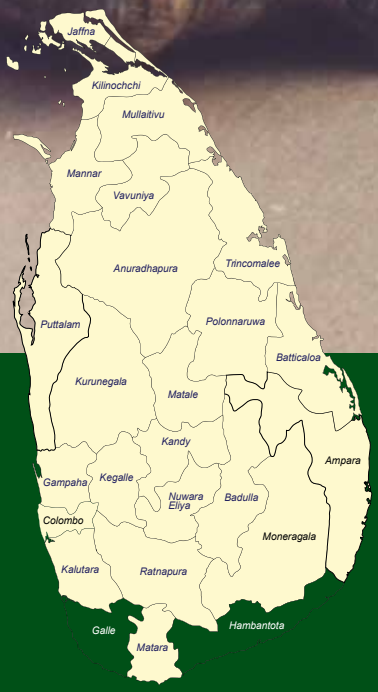
Lessons Learned and Sustainability

The project conclusion saw the realization of a community owned sustainable scheme that provides safe drinking water to the villagers. The establishment of the Epalawa Water Committee facilitated community mobilization during the construction phase and later for water distribution and maintenance. Each household pays a membership fee of LKR 125.00 per month. Further, LKR 10.00 is charged for each unit of water (1 unit = 1,000 litres) utilized by a household. It should be noted that this fee is much lower than the local government charges per unit. The number of beneficiary families increased from 110 at the beginning of the project to 150 within a few months, as those who were not convinced of the scheme joined later. These new members are charged LKR 12,500.00 for getting connected to the water supply scheme as they did not provide labour during the construction process.

The pump house constructed and maintained by the community

The committee has employed a full-time employee for maintaining the water pumps and for bill keeping. His monthly allowance and the electricity bills incurred in pumping the water are paid from the monthly fee collected from the water users. The committee has also been able to construct a water filtering system. Within a two-year period, a saving of LKR 300,00 was recorded, which has been banked as a fixed deposit, which they hoped to utilize to buy another water pump. The project is now completely self-sufficient. The committee understands the necessity of protecting the catchment area and the banks of the streams to prevent soil erosion. CDC is discussing methods of addressing these issues.

The project demonstrated that the application of proper community mobilization techniques can bring a fragmented community together to work towards a common goal. Empowerment of female members are directly linked to increasing family income and they also became more conscious about the resources and the environment around them. The introduction of alternative activities such as home gardening motivated all community members to participate in project activities. Continuous dialogue with all relevant stakeholders was necessary to move the project forward in a timely manner. For example, obtaining grid connection for electricity in this project depended upon the local politicians and government officials and therefore keeping them informed facilitated the process. Project budgetary allocations for specific activities should be flexible enough to absorb unexpected shocks such as dealing with increased expenses e.g. for demolishing the rock encountered while constructing the intake tank.



Community Based Conservation for Protecting Globally Endangered Marine Turtles

Project No:	**SRL/05/17**
Grantee:	**Turtle Conservation Project**
Location:	**Kosgoda (Galle District, Southern Province) and Rekawa (Hambanthota District, Southern Province)**
SGP Contribution:	**US$ 77,859.00**
In-kind Co-financing:	**US$ 11,906.00**
Cash Co-financing:	**US$ 24,211.00**
Project period:	**24 months (12/2005 – 12/2007)**
No of People Served:	**75 families**
Focal Area:	**Biodiversity**

Background

The aftermath of the 2004 tsunami left many coastal communities vulnerable and the natural resources around them degraded. The Turtle Conservation Project (TCP) identified Rekawa a fishing village in the Hambantota district, and Kosgoda in Galle district, in the Southern Province of Sri Lanka as areas which were in need of assistance. The lagoons of Rekawa and Kosgoda are marked by sandy beaches and mangroves where several species of marine turtles such as the Green, Leatherback, Olive Ridley, Loggerhead and Hawksbill turtles visit to lay eggs. The coastal communities' livelihood activities such as killing of sea turtles for meat, turtle egg gathering, mining of corals and mangrove felling depleted the natural resource base.

Tourists enjoying the turtle night watch at Rekawa

Based on the previous experience of TCP and its pioneering community-based turtle conservation project initiated in 1996, this project focused on using environmental conservation as a livelihood uplifting mechanism for the affected communities. The main objectives of the project were in-situ conservation of marine turtles, providing livelihood means, creating education and awareness and the restoration of marine and coastal habitats.

Objectives and Activities

TCP recognized that the integration between the coastal communities and coastal resources, which heavily depend on each other has to be addressed in working on marine conservation concerns. As a solution, TCP developed the 'Community Based Ecosystem Conservation Approach' (CBECA) concept which directly and indirectly involved the local community members in implementing activities to gain benefits, through livelihood and infrastructure development activities, education and awareness, and capacity and skills development programs. In ecosystem conservation, although TCP's main focus is on protecting the flagship species - marine turtles,

the link with other species both in land and water and their habitats was acknowledged as being critical for the survival of marine turtles. This multi-pronged approach focused not only on protecting marine turtles, but also habitats such as coral reefs, nesting beaches, beach vegetation, mangroves, sea grass beds and lagoons. The seven main components in this approach were: community livelihood development; Community infrastructure development; Environmental restoration and management; Education and awareness/capacity development; Partnership building and networking; Knowledge management and sharing lessons learned; Promotion and utilization of traditional knowledge and local culture.

In-situ nest protectors assisting in turtle measurement

As stated, the project promoted marine turtles as a charismatic species in the development of the Rekawa community uplift and the conservation of its environment. One of the most profitable efforts was the 'turtle night watch' nature tourism initiative which was launched as a self-sustaining exercise. Local villagers were trained as tourist guides to assist tourists to watch egg laying on the beach and also to work as turtle nest protectors by patrolling the beach. A CBO called Nature Friends of Rekawa (NFR) was formed with turtle nest protectors as members. By 2012, the project was expected to achieve financial stability mainly through tourism managed by the community members.

In May 2006, the Rekawa beach was officially declared a Sea Turtle Sanctuary by the Department of Wildlife Conservation as a direct result of TCP's conservation efforts and campaigns. The "Turtle Night Watch" nature tourism programme in Rekawa won several global awards in appreciation of services provided to the community, environment, economy, culture and to the visiting tourists. In 1998, TCP received the 'highly commended' award from British Airways 'Tourism for Tomorrow'. In 2008, World Travel and Tourism Council (WTTC) awarded TCP the 'Conservation Award' (finalist). In January 2008, the Rekawa beach was named as one of the 'Top 10 Eco Friendly Destinations in the World' by the online travel community IgoUgo, owned

by Travelocity. The list was based on recommendations from IgoUgo editors who reviewed the journals of comments of some of its 350,000 members. TCP received a 'highly commended' award from the Virgin Holidays Responsible Tourism initiative in 2008. The Ministry of Environment and Natural Resources in Sri Lanka awarded TCP the 'Green Employment Award' in 2009. Trip Advisor awarded TCP a "Certificate of Excellence" in 2015.

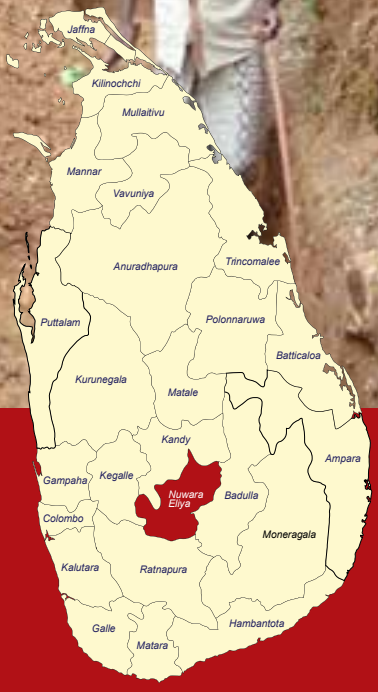
Lessons Learned and Sustainability

The community oriented efforts for conserving marine biodiversity in Rekawa and Kosgoda achieved remarkable success over the years for both the coastal community as well as the environment. The in-situ nest protection programme and tourism programme were handed over to the local community members in 2012 and they continue the work successfully to date with the help of TCP to gain benefits from the "Turtle Night Watch" tourism venture. During the tourist seasons of 2016 and 2017, approximately LKR 6 million (US$ 45,000) was generated. The income is used mainly to pay the wages of the guides and nest protectors. TCP's information centre located at Rekawa is used by them for the night watch programme, for which the electricity and water bills are paid from the income.

The CBOs in Rekawa and Kosgoda villages were linked to relevant government institutions, local business and international organizations such as the Columbus Zoo and Aquarium, Marine Conservation Society (MCS), UN Volunteer Programme, SCOTIA-USAID, UNDP GEF SGP and Mercy Corps for necessary training, business links and marketing opportunities. SCOTIA-USAID helped the community Batik Group by financing a production facility in Rekawa. Mercy Corps helped both the Batik and Coir Groups by financing kiosks in 10 large hotels in Tangalle, to display and sell products. The Department of Wildlife Conservation has been a partner in the programme and the Department has been assisted to enforce the law and safeguard the beaches.

The project showcases how partnerships and long term commitment is a must in the conservation of natural resources and poverty alleviation. A major challenge of this programme however, was to develop a participatory implementation plan with the involvement of all stakeholders i.e. the community, the Department of Wildlife Conservation, Sri Lanka Tourism Development Authority, local and foreign media institutions, donor agencies and other local NGOs. Once achieved, it was also the factor behind the success of the programme.

In addition to the turtle conservation, TCP has expanded its work to areas such as education and awareness, research and surveys, community incentives, law enforcement, policy campaigns, media exposure, contributions to international sea turtle conservation and policy efforts and providing opportunities to establish strong linkages with both national and international institutions. In 2015, TCP initiated a new project to enhance conservation efforts of Dugongs and seagrass beds in the Gulf of Mannar, replicating its Rekawa community-based sea turtle conservation strategies and experience.



Addressing Land Degradation Issues to Facilitate Community Based Adaptation to Climate Change

Project No:	**SRL/MAP-CBA/2010/02**
Grantee:	**Ekabadda Praja Sanwardana Kantha Maha Sangamaya**
Location:	**Serupitiya GN Division, Nuwara Eliya District**
SGP Contribution:	**US$ 40,504.00**
Cash Co-Financing:	**US$ 3,123.00**
In-Kind Co-Financing:	**US$ 16,208.00**
Project Period:	**24 months (11/2010 – 11/2012)**
Number of People Served:	**200 families: 1100 people**
Focal Area:	**Land Degradation (Community Based Adaptation)**

Background

The rural village of Serupitiya lies in the eastern slopes of the central hills in the Walapane Division of Nuwara Eliya District. Villagers in this area have battled with nature for a long time since Serupitiya is situated on sloping and highly eroding lands with little access to irrigation or drinking water. The main livelihood of the village is vegetable cultivation, which is solely dependent on rainfall. Increased climate and rainfall variability is evident in the area with longer dry periods, intense and short spells of rain, unseasonal rainfall and late onset of the Northeast monsoon.

For Serupitya, the main rainfall season begins in October with heavy inter-monsoon rains from November to February. The dry season sets in May onwards and lasts through August up to mid-September. Strong winds during July and August aggravate dry conditions and dries up streams and other surface water sources commonly used for drinking and bathing. Although the village lies right above Randenigala, a large hydro-electric reservoir and seasonal droughts have commonly led towards health and sanitary issues in the village.

The living conditions in Serupitiya

The community lives on or below the line of poverty and dismal social conditions are reflected in poor school attendance and early marriage. During the long dry months, men migrate out of the village to work in irrigated rice fields, leaving women and children to fend for themselves. Home-based self-employment avenues are limited in the village and lack of water prevents women from undertaking a cottage industry, home gardening or food preparation for sale. The surrounding area is a declared wildlife sanctuary, limiting the scope for development in local surroundings. Further, destructive land use and crop cultivation harms the integrity of the protected area around the village. Human-animal conflicts are common with crop damage from monkeys and wild boar and sometimes disputes with elephants.

Objectives and Activities

The main objective of this Community Based Adaptation (CBA) project was addressing erosive cultivation practices which degraded the mountain slopes, reduce the water yield and increase siltation of the downstream reservoir. The strategy was to institute land protection measures with community participation and introduce more stable year-round income sources to the people. This was done through four main components: land survey and soil protection; introduction of perennial crops for stable income; introduction of livestock as an alternate income source; and community mobilisation and empowerment.

As a prelude to designing and implementing community based adaptation projects, the project used the Vulnerability Reduction Assessment (VRA) tool to gauge the extent of climatic vulnerability and willingness within the community to address the root cause of vulnerability. Around 85 households participated in the VRA along with key local officials including the Grama Seva Niladari (village administrative officer), the Agrarian Services Extension officer, the Samurdhi (welfare) officer, other NGOs and voluntary organizations working in the area. The results of the VRA clearly showed that the target population faced substantial risks to their livelihood from current

Mapping the land area

climatic conditions and that if the situation were to worsen they would be in dire need of alternate income. The exercise also demonstrated the extent of marginalization and distance between this community and its service providers, especially the government administration. Poverty and institutional neglect are the major barriers for adopting and implementing the various adaptation measures identified.

Land parcel survey covered the farm plots of every beneficiary and was conducted by an expert team from the Natural Resources Management Centre of the Department of Agriculture. The survey resulted in each plot having its own specific map giving contours, slope category and soil type, a land management plan and crop recommendations. There were plots where the team recommended only perennial cover due to the steepness of the slope. On most land traces, old soil conservation measures were found. The team recommended that these be rehabilitated and strengthened with additional barriers in between, to cope with the volume of soil loss. A total of 437 acres of land were rehabilitated with soil conservation measures. Farmers adopted the recommendations of the land survey, and were compensated for the labour spent in establishing the soil conservation structures such as stone hedges, contour drains and live fences. Soil conservation impacts were noticeable immediately after the first rains. Some bunds and drains trapped over a foot of top soil after a heavy rain. Farmers who had lands outside the project area demanded the same survey and land contour plans.

Perennial crop cover was confined to some fuel-wood and timber species prior to the project. In order to reduce the communities' vulnerability to drastic changes in rainfalls seasons, the technical advisors to the project team introduced a number of high-value perennials with good market demand such as vanilla, cinnamon, and pepper among others. Through a complementary government-funded initiative, the households received coconut and cashew plants and due to their popularity, the project supported further distribution of these plants. The successful perennials were ones that withstood the ravage of the long dry period, ones that were resistant to animal attacks and those with a good market potential.

Home gardening was introduced to 200 households and 36 families used home garden produce for consumption and sale. The results of a post-project survey found that composting habits had increased from 14% of households before the project to over 80% after the project. 58 families benefitted from sale of home garden produce and perennial crops such as cashew and coconut. Today, all home gardens have more than five perennial crop types ensuring family food and income during periods of climatic uncertainty.

The project supported the community to organize themselves into a milk producing group, which was not a popular livelihood choice in Serupitiya. They were then supported by the government through local veterinary officers and by MILCO, the country's largest milk products manufacturer. The project funded the purchase of 15 cows; subsequently their calves have been handed to other members of the group, as per the agreement. Presently there are 23 milk-producing households, who earn between US$ 3-5/day by selling the milk. Livestock

were insured through the government veterinary insurance scheme. A milk chilling centre was established with government co-finance to support the Milk Producers Society. The Milk Producers Society established through the project has since lobbied and brought in two new projects for community development, including a drinking water project for one of the hamlets of Serupitiya.

The project mobilized villagers to organise themselves into two community based organisations. One was for the key livelihood diversification programme - milk production. It is a strong society with almost half the project households as members waiting in line for a calf. The other is a women's organisation established by the implementing NGO to support savings and credit schemes among women. The majority of women had never owned a savings book in their lives. Two years later, the women's society members are the proud owners of over US$ 2000 savings in the bank. This platform is also used to deliver programmes on health, sanitation, kitchen gardens and efficient water use to village women. Awareness of sanitation, general health and hygiene have been beneficial to women and children in particular.

A community member at his cattle shed

Gender mainstreaming could be said to be high in this project. From the initial stages of project implementation, women's participation was prominent. The implementing NGO is a womens' organization with all responsibilities borne by female officers. This encouraged women to come forward and be active. This resulted in the successful initiation and running of the savings and credit society, programmes on nutrition and health awareness, kitchen management and maintenance for a smoke-free kitchen and children's health. Women also participated fully in core activities of the project including livestock farming, home gardening and soil conservation.

Lessons Learned and Sustainability

The Divisional Secretariat has followed the project's success and recommended the approach for up-scaling through government sponsored rural development programmes. A US$ 7.5 million climate adaptation project was approved to up-scale this CBA project's proven approach for soil and land conservation in rain-fed farm lands covering the entire Walapane Division. The adaptation project is funded by the Adaptation Fund Board (AFB) and implemented by the Ministry of Environment through UNDP.

The project highlighted the importance of technical and scientific information to supplement community knowledge when designing adaptation actions. Networking with government, semi government and non-government institutions was shown to bring in much needed co-financing to a small-scale project. Challenging baseline situations impacted project implementation and results. For example, in Serupitya, poverty is so endemic that project activities did not make a substantial impact on the socio-economic conditions of the village. Developing linkages with government service providers enabled substantial empowerment of a marginalised community.

Interweaving Traditions and Biodiversity Conservation

Project/s No:	**SRL/02/20; SRL/04/03; SRL/05/07 (3 grants)**
Grantee:	**Podujana Himikam Kamituwa (PHK)**
Location:	**Ingiriya and Horana villages in Kalutara District, and later extended into nine other districts**
SGP Contribution:	**US$ 30,486.00; US$ 49,114.18; US$ 33,808.55**
Cash Co-Financing:	**US$ 00.00; US$ 3,994.00; US$ 36,658**
In-kind Co-Financing:	**US$ 13,793.00; US$ 7,418.00;US$ 22,452.00**
Project Period:	**12 months (12/2002-12/2003) ; 12 months (02/2004-02/2005) ; 26 months (03/2005 – 05/2007)**
Number of People Served:	**2,000**
Focal Area:	**Biodiversity (Demonstration)**

Background

Ingiriya and Horana are paddy cultivating rural villages located in the Kalutara District. Traditionally, it was a common practice amongst rice paddy farmers in these villages to maintain a separate area in the paddy field for growing rush and reed species, known as the "Pan Kotuwa" or Reed plot, as it acts as a bio-sponge for absorbing salinity while providing raw materials to weave mats, baskets for domestic use. The local communities used different species of rush and reed such as Gal-eha Pan *(Cyperus corymbosus)*, Thunhiriya *(Schenoplectus grossus)*, Havan Pan *(Cyperus pangorei)*, Boru Pan *(Eleocharis dulcis)*, and Haal Pan *(Cyperus haspan)* for weaving purposes.

Reed mats

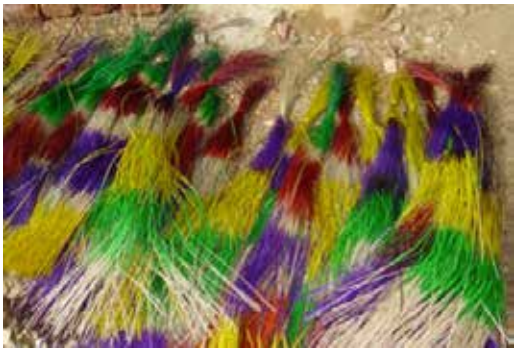
However land filling, using wetlands as waste dumping sites, use of pesticides and other chemicals, and burning have caused rapid decline of rush and reed species. Further decline in the traditional weaving industry throughout the country was caused mainly through the profuse use of polythene and other synthetic bags and mats. The cost and time of production for the polythene bags are low and require minimum skills which set the stage for their abundant use in every part of the country. The environmental cost, such as clogging of waterways and the persistence of polythene in all habitats, was conveniently ignored. As the environmental cost in utilizing synthetic bags, mats and other items became evident, the need to revive the fast vanishing traditional weaving industry using the rush and reed vegetation, gained attention. In the past, reed related livelihoods were an integral part of village life spanning the entire country from Jaffna at the northern tip to Hambantota in the south and it managed to survive to a limited extent up to date. The project intended to tap the potential for expansion of the programmes to as many districts as possible. Older women in the villages were anxious for the revival of the trade, while the younger women needed training.

Objectives and Activities

The Podujana Himikam Kamituwa (PHK) launched the Rush and Reed Conservation and Diversification Programme in 1999 to rehabilitate rush and reed planting within paddy fields through reviving traditional methods of establishing a reed plot and cultivating a variety of plants and breeding fish, which in turn could supply a whole range of farmer household needs. Further, it intended to reintroduce the traditional rush and reed weaving as an income generation activity especially among the female members of low income earning communities. The revival of the weaving industry also led to the preservation of skills in designing traditional motifs and developing natural dyes, and provide a viable alternative to polythene and plastic based products. Over the years, the scope of the programme expanded to establishing a network of weavers, training women in weaving and conservation of wetland biodiversity. The GEF Small Grants Programme supported three initiatives of PHK in 2002, 2004 and 2007 to encourage and sustain the work.

The project motivated people through awareness on the importance of reviving an industry based on sustainable use of locally available raw materials and the traditional and cultural values of reed-based handicraft industry. A scoping study identified the reed species that were threatened

and under-utilized in the crafts industry. The programme was initiated with ten reed nurseries involving 20 farmers in Horana and Ingiriya villages. It introduced a "micro land unit" which consists of three components; a paddy field, a reed bed and a home garden within less than ½ hectare of land using organic farming methods in an effort to conserve biodiversity. The farmers were given training in organic farming and manufacturing of liquid fertilizer and compost.



Coloured reeds

Beneficiaries were encouraged to grow leafy vegetables such as Kohila *(Lassia spinosa)* and Kankung *(Ipomoea aquatica)*, while a safe habitat for fish were created by growing lotus and water lilies within the reed plot. Live fences were established to prevent soil erosion on higher elevations. Trees needed for producing dyes for colouring the reeds were planted. This approach satisfied cottage industry requirements as well as conservation of biodiversity.

In 2003, the NGO won an award at the exhibition 'Design Fair 2003' exhibition in Sri Lanka for a mat produced using a traditional design known as the 'Divi Adiya' (Leopard's Foot Print). Subsequently, the Sri Lanka Export Development Board of the Ministry of Enterprise Development and Industrial Policy and Investment Promotion made it possible for the NGO to participate in theMarket Exposure Programme in Frankfurt, Germany. As the success of the initiative spread, the project received requests from people who wanted to establish reed beds and reed-based cottage industry ventures. The project was chosen as one of 26 outstanding finalist programmes for the 2004 Equator Prize. It was showcased at the 7th Conference of Parties (COP7) to the Convention on Biological Diversity.

In the second phase, the project had the objective of disseminating information nationally and establishing rush and reed supplying and production centres in several districts. Quality improvement of the products such as mats and bags and diversifying into other rush and reed products were also aimed.

With a grant awarded by the Ministry of Environment through the World Bank funded Clean Energy Investment Framework (CEIF) initiative, the showroom 'Gama Gedera' was built using low cost traditional construction methods. The showroom facing the busy Ratnapura – Panadura road, functions as sales outlet cum conservatory and a production house.

Securing further funding by successfully bidding for the UNDP's TRP (Transition Recovery Program) in 2011, they undertook training of 52 war affected women of all ethnic groups from the East, North and North Central Provinces. 20 day training programmes of 20 participants each from the seven districts of Jaffna, Mannar, Vavuniya, Ampara, Pothuvil, Polonnaruwa and Anuradhapura (2011-2012) was undertaken. Subsequently, the training programmes were extended to Bangalore, India on the invitation of the Green Foundation, to train village weavers and cultivators for six weeks.

The programmes can take credit for around 12 varieties of rush and reed plants being reintroduced and the revival of the use of the Gal-eha reed in the craft making industry. The quality of crafts was improved with the collaboration of the National Design Center, resulting in higher marketability and demand. The products also diversified to include in-demand conference bags/ files, foot wear and furniture. The wetland habitat was restored and enriched, bringing back the

Women trained in weaving through the project

frogs, spiders and other insects that are essential agents in maintaining nature's intricate balance. Altogether, over 750 plants have been re-introduced while several fish species that were absent for a while have returned.

Producing 1000 items of craft pieces a month and craft production have become an important source of income for the women, giving them a previously non-existent independence and a voice in the decision making process. The collaboration with the National Design Centre has provided the opportunity to showcase the weavers' talents and also hone their skills. Women of all ages come together, with the older ones sharing knowledge with the younger women and also coming up with innovative new designs. More than 2000 individuals, mostly women have been trained in weaving as a self-employment skill by this programme.

An "All Island Federation of Weavers" was established in 2012 and expanded to encompass all weavers including users of Cane, Wild date palm (Indi kola), Palmyrah, Pandanus and other plant material that are traditionally used for weaving in 2013. This brings all weavers together to have one voice to determine their future progress by setting standards, sharing knowledge and skills and more importantly, improving the marketability of products.

Lessons Learned and Sustainability

It has been a long march from fighting for the right to conserve the environment, the cultivation of the resource material for weaving to diversifying crafts and production to enter new markets with more timely demands such as conference needs and footwear. The united voice of the All Island Federation of Weavers is hoped to uplift the industry and expand its margins. There is a high demand for reed-based products in the local market and the project is self-sufficient in materials needed for production of items.

A project beneficiary with weaved reed product

The improved income of women and the self-sufficiency in food and other domestic and agricultural needs from weaving as well as the reed plot will sustain the interest and enroll new entrepreneurs and farmers ensuring the sustainability of the programme. Several state agencies support and collaborate with the NGO on improving designs and developing a market for the goods. These include the National Design Center, the Board of Handicrafts and the Export Development Board. In addition, officers of the Department of Agrarian Services, the Divisional Secretariat and Development Officers of the area have continued to support the project in numerous ways, ensuring its sustainability. The 'Gama Gedera' itself is a self-sustaining enterprise and although the land is not owned by them, the Municipal Authorities have given it for the purpose of a showroom and a training centre.

Increased Water Security through Ecosystem Restoration

Project No:	CWI/SRL/03/01
Grantee:	Neo Synthesis Research Centre
Location:	Kalpitiya Peninsula, Puttalam District
SGP Contribution:	US$ 21, 487.25
Cash Co-Financing:	US$ 39, 039.00
In-Kind Co-Financing:	US$ 4, 545.00
Project Period:	28 Months (11/2003 – 03/2006)
Number of People Served:	> 1250 people
Focal Area:	Land Degradation (Community Water Initiative)

This project on "Ground Water Quality Improvement through Ecosystem Management" was one of the top 10 finalists in the 2009 Kyoto World Water Grand Prize.

Background

Kalpitiya Peninsula is located on the West coast of Sri Lanka. The climate is characterized by high temperatures throughout the year and an average annual rainfall of 800-900 mm that occurs only between October and January. The peninsula is bound by the Indian Ocean on one side and the Puttalam estuary on the other. Sandy regosols occupy a greater part of the elevated beach plain, of special significance is the underlying Gyben-Herzberg lens of fresh water. This permits stable human settlement and agricultural production on this landscape even in the very dry environment.

Most of the communities in Kalpitiya Peninsula who farmers and cultivate cash crops such as capsicum, onions and tobacco as monocultures. Coconut is their only tree crop. Extensive utilization of inorganic fertilizer and chemical pesticides for cultivation has brought about a dramatic decline in groundwater quality and increasingly high concentrations of nitrate, nitrite, chloride and potassium detected in the water. The implications of nitrate contamination of groundwater on human health include the incidence of methemoglobinemia and gastrointestinal cancers. As a result, water in many of the wells in the Kalpitiya Peninsula is not suitable for human consumption.

In 2001, the National Water Supply and Drainage Board (NWS&DB) collaborated with the Neo Synthesis Research Centre (NSRC) to explore the use of Bioremediation to reduce concentrations of nitrates and nitrites in groundwater in Kalpitiya. The success of the initial programme resulted in the call for its replication. Bioremediation is the use of plants to breakdown hazardous substances into less toxic compounds and includes both microbial and phyto-remediation. It uses analog forestry as its main tool, restoring the vegetation in the micro watershed around the drinking water wells by dense planting around wells with deep rooted, native trees to form a 'root mat' drawing in the soil contaminants.

Objectives and Activities

The main objective was to mitigate the root cause of the problem that lay in the prevailing unsustainable land management practices in Nawakkaduwa, Mampuri and Nirmalapura villages in the Kalpitiya Peninsula. It also sought to promote organic agriculture and the planting of diverse tree crops in selected home gardens. The landscape design of the model well area involved three main aspects: bioremediation, production (organic home gardens) and a green belt.

The project was initiated with an awareness workshop for local Government officials and other leading persons in the area. As the concept was new awareness raising and was a continuous process involving all stakeholders. Twenty-four wells in the villages and identified public locations were selected by NSRC through visits to drinking water wells identified by the local authority. Informal

Bountiful produce of home gardens

discussions held with owners/users of the wells and surveys on each well were undertaken using a prototype survey form.

Each restoration plan with base maps were drawn up by NSRC staff together with the community. These were used as the matrix, upon which the landscape design was finalized, which included information on species, number of plants required and the planting pattern. Vegetation similar to the fragmented natural forests of the area which has known qualities for remediation were selected. The immediate area around wells were planted with several deep rooted, mostly native species of trees that had long and short growth cycles. They were planted in a dense manner so as to form a 'root mat' below the surface.

Crops grown in a home garden using organic cultivation regimes

The main objective was to facilitate the uptake of the contaminants by the roots of the trees. Trees species from various genuses such as Terminalia, Madhuca, Manilkara, Diospyros, Berrya and Pongamia were used among many others. The process of microbial remediation required that large quantities of organic matter be added to the sandy soil since a carbon rich environment was mandatory for the process of denitrification to occur. Initially, coconut peat and straw were added. As the trees and shrubs grew, the organic content required was provided through leaf fall and detritus. Fences were built around wells for protection from grazing animals. The beneficiaries' water wells and planting procedures were closely monitored and encouragement provided to the participants in their new venture.

Clean well water used for consumption

The surrounding area was developed as a production area where both perennial and annual crops were grown using organic cultivation regimes. Most gardens began to reap harvests for domestic consumption, thus increasing food availability and diversity. The green belt along the coastline was developed using several species that could withstand the salt laden sea breeze and serve as wind breaks. Trees from genuses Barringtonia, Casuarina and Pisonia were planted. Nearly eight thousand plants belonging to fifty-four species were planted in home gardens, around public wells and beside the lagoon. 30% in canopy closure was recorded within four years, owing to maturity of the well watershed and the water quality of the wells improved with the maturity of the vegetation. The Regional Laboratory of the NWS&DB conducted tests for water potability using the WHO Standards and the results revealed that water is now potable.

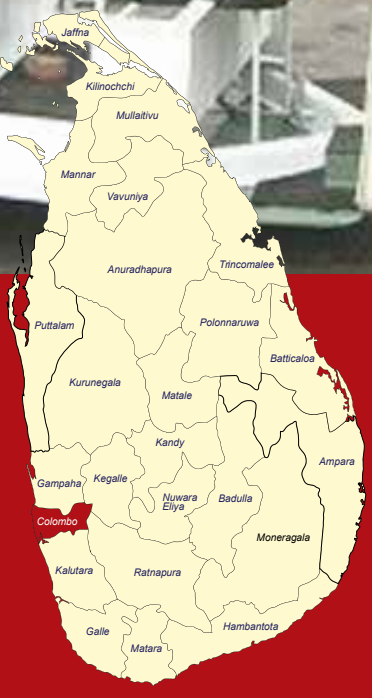
This increased water security ensuring a clean and continuous supply of safe water for villagers. Further, biodiversity conservation owing to the forest garden provided a habitat for birds, butterflies, amphibians, reptiles, dragonflies and earthworms. Plant diversity fostered pest predator interplay, reducing the need for pesticides. Home gardens generated an income throughout the year while improving family nutrition through the consumption of chemical-free food as well as increased food security.

Lessons Leaned and Sustainability

The project demonstrated the need for continuous awareness raising for all stakeholders as a necessity for the introduction and successful implementation of a new project concept such as Bioremediation. Scientific backing by research institutions as well as close monitoring of beneficiary wells played a key role in obtaining positive project results.

School children using clean water

Bioremediation is a self-sustaining process. It is a clean and simple technology which can be easily adopted by the community. It is affordable, requires minimum investment and no external energy input. The only cost is for the maintenance and protection of trees. It gives the participants clean water, a pleasant micro-habitat around their wells and the possibility of growing organic vegetables for consumption and sale. The sustainability of this activity is therefore ensured. It has already been successfully replicated in wells that were salinated as well as contaminated with sewage in the Tsunami of 2004, in Kalmunai, after the Eastern Province. Replication is possible in other parts of the country as well as in other climatic zones. A community that recognizes the potential benefits is mobilized to implement the process carefully and local authority support to the work adds to the sustainability of the venture.



Pilot Testing Electric Vehicles in the City of Colombo

Project No:	**SRL/03/14**
Grantee:	**Lanka Electric Vehicles Association (LEVA)**
Location:	**Colombo District**
SGP Contribution:	**US$ 28, 946.16**
Cash Co-Financing:	**US$ 4,515.00**
In-Kind Co-Financing:	**US$ 5,916.00**
Project Period:	**27 months (05/2003 – 08/2005)**
Focal Area:	**Climate Change**

Background

It is estimated that about 1 million of the 22 million population of Sri Lanka live in the Colombo District and an equal number of a floating population enters the financial capital of the country daily for various purposes. 60% of the country's motor vehicles are registered within the Colombo metropolitan region and is a major source of air pollution. Of these, especially motorbikes and three-wheelers, contribute to toxic air pollution and emit large amounts of CO_2 per unit distance traveled. Another particular concern is the increase in diesel powered vehicles. Diesel used in Sri Lanka has a higher concentration of sulphur compared to those in other countries in the region. The use of leaded gasoline by petrol vehicles too has the potential of causing health problems.

Being a relatively dense and compact city with access to electricity, electric vehicles have a potential in the city's transport sector and creates an opportunity to introduce a zero-emission vehicle fleet to the dense core areas of Colombo. Electric vehicles (EV), whether in the form of two, three, or four-wheelers, have significant potential to simultaneously reduce urban air pollution and greenhouse gas emissions, especially when they are used in a mass transport context. Most electricity is produced at centralized sources, whose efficiency and emissions are generally easier to improve and regulate than those from non-point sources such as automobiles. Moreover, EVs may be powered with carbon-neutral sources such as hydroelectricity or wind, especially in areas where significant portions of the electricity mix comes from hydro-power. The electric vehicles could be charged during the evening, when there is low demand on the electric grid and often excess electricity is available.

While EVs cannot generally equal the range or power of conventionally fueled vehicles, they can be appropriate for urban transport where electricity supply is plentiful, stops are common and where great speed is unnecessary. They also generally produce less noise, thus potentially improving urban quality of life. This venture has the potential to save a significant quantity of fuel, making the national economy less dependent on petroleum, where the price and supply of which are continually volatile.

Objectives and Activities

The project was developed by Lanka Electric Vehicle Association (LEVA) in 2003 with the main objective of looking at the possibility of developing an environmentally-friendly transport system. Its goal was to demonstrate the viability of commercially introducing electric and hybrid vehicles on the streets in Colombo. Electric three-wheelers were introduced as an initial step. In addition, the project also sought to train unemployed youth to operate and maintain these vehicles, while an awareness campaign was conducted on the benefits of electric vehicles for reducing emissions and pollution with support from the Ministry of Urban Development.

Although planned as a demonstration and capacity building project, LEVA had to switch its focus, approaching it from a strategic standpoint as many policy barriers had to be removed before the project objectives became a reality. The first impediment was the discovery that there was no Sri Lanka customs code covering Electric Vehicles when papers were submitted to import the chassis for the first prototype. LEVA started by approaching the Director of the Fiscal Policy Department, and lobbied for an amendment to the Customs code to allow for the import of the vehicles which was eventually granted. The vehicle was brought in and a team of 10 youths were hired to be trained in assembling and servicing the vehicle. The three-wheeler had a seating capacity of seven passengers and a driver. It was fitted with a 5.46 kW series wound DC motor, a Curtis controller and twelve 6V/ 200A deep cycle lead acid batteries. On a fully charged set of batteries, it had a range of 75 km.

The project was further hindered by yet another policy barrier: as there was no provision in the Motor Traffic Act covering electric vehicles, the vehicle could not be registered to drive on

Sri Lankan roads. Finding itself in a lobbying role once more – this time with the Ministry of Transport, the NGO succeeded in securing an amendment to the Act, permitting the vehicle to travel within the streets of Colombo. This vehicle was then demonstrated to Government officials as well as Colombo Municipal city officials. Being quite cognizant of Colombo's air quality problems, and being suitably impressed by the vehicle trials, the Government decided to throw its support behind increased EV transport in Colombo. A Cabinet subcommittee was set up to make recommendations relating to the lowering of import duties on Electric Vehicles.

The private sector benefited from the improved policy and increased public awareness, began developing commercial EV markets at this time. Three Sri Lankan firms are spearheading the commercial EV sector in Sri Lanka at present – Ceyto Lanka, Ceylinco Consolidated, and Super Star (Pvt) Ltd. They are importing, assembling, and manufacturing electric three-wheelers, small electric cars, and electric motorcycles respectively. These companies are being funded by investors rather than grants, and their future looks quite promising as the policy environment surrounding electric vehicles continues to improve and as electricity continues to remain less expensive than imported petroleum fuels. Further, the use of EVs is taking off in the eco-tourism sector, with Eco-Hotelier Sanasuma Development (Pvt) Ltd demonstrating and using the vehicles in its hospitality operations, while the city of Kandy is exploring increased use of EVs in its tourism sector as well.

Lessons Learned and Sustainability

Electric vehicles were largely unknown and untested in Sri Lanka before this project. Shown by the complete absence of import or transport policy framework around the vehicles, nobody had previously worked on their potential for air quality improvement and climate change mitigation in Colombo's transport sector. This project was envisioned from the outset as a technical demonstration project. However, finding that the barriers to increased EV use in Sri Lanka resided more in policy arenas than in technical specifications, the grantee switched its focus to policy dialogue activities, opening the import and vehicle registration processes to EVs. This demonstrates a flexible project approach, wherein the grantee adaptively managed the project approach based on challenges that arise throughout the course of the project, rather than blindly carrying through with a predetermined plan in the face of unexpected barriers.

By completing the initial demonstration and policy legwork, the outcomes of the project have paved the way to 'organic' upscaling, which is being carried out by the private and public sectors independently, requiring little further urging from NGOs or environmental pressure groups. The three companies investing in the vehicles are a combination of established conglomerates and new start-ups, and are mixing approaches of complete local vehicle manufacture and local assembly of imported components. These companies have a significant potential to generate employment as they and the sector grows. On completion of this pilot project, LEVA with part funding from GEF/ SGP, the Government and the Private Sector, converted a diesel driven bus to an electric series hybrid, with the intention of introducing similar buses to the public transport system. The main users of three-wheeler taxis and public buses are lower and middle class people. Given the relatively low price of electricity compared to fossil fuels in Sri Lanka, increasing proportions of EVs in the city's public transport fleet has the potential to reduce the burden of transport expenses for much of the city's population.

This project received global recognition when it was selected as a winner of the Lighthouse Projects Competition, which is an initiative of the United Nations Framework Convention on Climate Change (UNFCCC). The competition awards projects that addresses climate change and deliver social and environmental benefits to the urban poor in developing countries. The project was also showcased at the Climate Change Conference, COP 18, which took place in Doha, Qatar on the 4th of December 2012.

Improving Policy and Mobilizing Civil Society in the Safe Handling of Chemicals

Project No:	**SRL/SGP/OP5/CORE/CH/11/07**
Grantee:	**Centre for Environmental Justice**
Location:	**Island wide**
SGP Contribution:	**US$ 50,000.00**
In Kind Co-Financing:	**US$ 2,925.00**
In Cash Co-Financing:	**US$ 7.092.00**
Project Period:	**21 months (12/2011 – 09/2013)**
Focal Area:	**Chemicals**

Background

The consequences of intense use of chemicals and its impact on both human and environment are a rising concern of the modern world. Developing countries such as Sri Lanka use chemicals extensively, especially in agriculture. It is a challenging task to initiate action on reducing excess amounts being used. Over 90% of the people using chemicals in agriculture, industries or at household level are unaware of the compounds, the hazardousness and safe handling methods. Over-use of pesticides and fertilizer is a main concern in the agricultural sector as most farmers are not informed on the correct dosage, usage and disposal methods. Farmers who engage in spraying agrochemicals without protection could be more vulnerable to cancer and other ailments. Most shops selling chemicals seem equally casual in their attitude towards safety, as chemicals, mosquito repellents, detergents, paint and rat poison are stored on the same shelf with consumables, while the consumers take them home in the same bag with food items.

Studies indicate that many chemical hotspots exist in the country. The open dump sites in the Colombo urban areas namely Karadiyana, Meetotamulla and Bloomendhal, chemical storage facilities, empty chemical container yards, chemical industries, vehicle service stations, are among some of the hotspots. Since garbage sorting is not adequately practiced at the point of disposal, the open dumps contain a mixture of domestic, industrial and hospital waste. The people living around the sites, the workers and waste pickers are vulnerable to chemical exposure. Wastewater from industries washes into canals and tanks contaminating water bodies, polluting the lands and in some instances drinking water wells.

Unsafe use of pesticides is a common practice among farmers

Sri Lanka introduced hazardous waste management regulations in 1996, yet they are not fully implemented due to lack of funding, technical knowledge, awareness and safe disposal sites. In 2006, the new global policy and a strategy, namely 'Strategic Approach to International Chemical Management' (SAICM) was adopted by the Government, which specified protocols to change the way chemicals are produced and used, in order to minimize harmful effects on human health and environment, as agreed in the 2002 World Summit on Sustainable Development. Center for Environmental Justice (CEJ), is working closely with the Ministry of Environment, the focal point for SAICM in Sri Lanka along with other line agencies to achieve the objectives of this initiative.

Objectives and Activities

CEJ's SGP funded project on POPs and other chemicals had the objectives of enhancing public awareness, engaging in policy dialogue and networking on the wise use of chemicals, in line with the SAICM objectives. The goal of the project was to reduce health and environmental impacts and risks by safe handling of household, agriculture and industrial chemicals through mobilizing civil society.

Discussions were held with the Ministry of Environment, Sri Lanka Customs, the Ministry of Health, and Industrial Development Board on importation of PCB contaminated items and the

Minamata Convention on Mercury negotiations. Two policy papers on PCBs and Mercury were produced and distributed among the policy makers and CSO networks. The policy dialogues were co-financed by IPEN and provided an enabling environment in the wise use of chemicals within Sri Lanka. Of the two major changes CEJ achieved through this initiative, one was the change in policy on importation of PCB contaminated electrical equipment. Using the information gathered by CEJ, Sri Lanka Customs and the Ministry of Environment persuaded the Sri Lanka Treasury to amend the 'Export and Import Act' banning the importation of items contaminated with PCBs. Until the amendment comes into effect, Sri Lanka Customs refer to the PCB contaminated items imported under HS codes to the Central Environmental Authority for clearance.

Creating awareness among school children on the use of chemicals

The second achievement is the success in convincing hospitals to use non-mercury appliances. A report was compiled based on a survey on the use of mercury appliances in hospitals and health clinics. The survey found that most broken mercury appliances are disposed along with broken glassware. CEJ alerted the Ministries of Environment and Health and the Central Environmental Authority in June 2012 on hazardous waste management including broken mercury appliances and highlighting agreements made at the Inter-governmental Mercury Treaty negotiations. The policy decision made by the Ministry of Health to phase out Mercury-based thermometers and sphygmomanometers was influenced by CEJ's initiative. The Ministry issued a circular to the Chief Secretaries of Provincial Councils, Directors, Regional Directors, Medical Superintendents and Medical Officers of Health (MOH) to purchase non-mercury thermometers and non-mercury aneroid Sphygmomanometers, collect dental amalgam using amalgam separators for safe recycling, store used CFL bulbs without breaking and to use T-5 CFL bulbs instead of T-8 bulbs. The Ministry of Health also decided to provide hospitals with emergency Mercury spill kits. As a step forward, CEJ requested the Treasury, Ministry of Finance and Planning, with copies to Presidential Secretary, Ministry of Health, Ministry of Environment and Chairman, Central Environmental Authority, a budget allocation for purchase of non-mercury hospital appliances.

A research carried out by CEJ found levels as high as 30,000 ppm of Mercury in skin whitening creams in 25 brands out of 40 samples tested. The Ministry of Health, Consumer Affairs Authority and the Sri Lanka Standards Institute agreed to regulate them under the Drugs and Cosmetics Control Act.

Identifying "Green Stores" by CEJ members

The "Green Store" concept was a program by CEJ to identify and recommend

shops that properly managed chemicals. They were recognized mainly in Anuradhapura and Polonnaruwa Districts in the North Central Province (NCP) where chronic kidney disease is affecting paddy farmers. One of the main intentions was to prevent the misuse of agrochemicals and chemical contamination of other consumer goods in storage. These stores were provided with a certificate, to encourage them for maintaining an eco-friendly showroom. The guidelines to identify a "Green Store" were prepared with the help of Consumer Affairs Authority and Public Health Inspectors.

CEJ also conducted medical clinics in the North Central Province (NCP) in collaboration with District Medical Officers and Public Health Inspectors to screen kidney patients. Over 6,000 people visited the medical clinics and more than 500 new cases were identified and referred to hospitals. All information obtained were shared with high level officers in relevant Government institutions to bring national attention to the people affected with 'Chronic Kidney Disease of unknown etiology' - CKDue. Water tests were conducted in the affected areas of NCP by CEJ in collaboration with the Centre for Science and Environment (CSE) India, which revealed that kidney patients were drinking poor quality water. This was formally conveyed to the Water Supply and Drainage Board. Another disturbing finding was the fact that POPs are being generated at household level through burning of trash containing polythene, plastics and rubber. 80% of housewives were also in the habit of using a piece of polythene to light the cooking stove in the morning, exposing them directly to noxious fumes.

A workshop organized by CEJ for housewives

Research carried out by CEJ found that paint in Sri Lanka contains Lead levels as high as 135,000ppm. Based on this, CEJ filed a case in the Supreme Court in 2011 demanding mandatory Lead Paint standards. They argued that although the draft SLS specifications (SLS 539:2010 dated 2010-04-30) on enamel paint and draft standards for Toys and Accessories were existing, they were not mandatory. As a result of the court case, mandatory standards have been gazetted by the Consumer Affairs Authority limiting the Lead level in enamel and floor paint to 600 ppm and emulsion and toy paint to 90 ppm in September 2011. The regulations came to effect on 1st January 2013. Continuous testing of the Lead levels in decorative paints in the market by CEJ showed that by the end of 2015, paints containing Lead were no longer being sold in the market. All paint containers carried information on the Lead level and information such as "No added lead" or "Lead safe paint" were printed on the cover.

CEJ Initiated discussions on the implementation of hazardous waste regulations with relevant authorities. The first discussion on the "Implementation of hazardous waste regulations and challenges" was held in July 2012 with the participation of representatives from Government, NGOs, CBOs, laboratories and media. A second meeting was held in January 2013.

Discussions on hazardous waste regulations

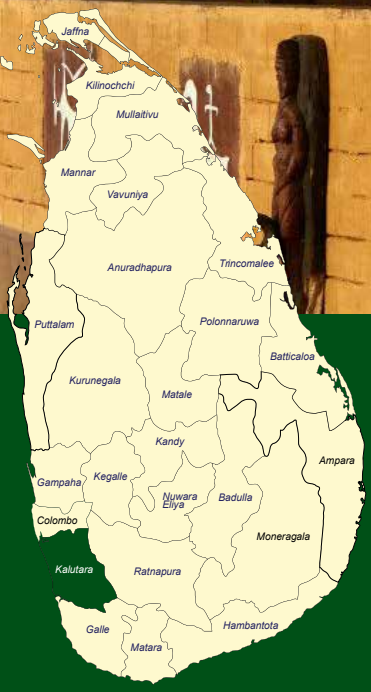
The first discussion on "Phasing out Asbestos" was held in August 2012. The manufacturers argued that when the sheet thickness is higher than 6mm, asbestos fibers do not cause harm. The Ministry of Environment reported that no policy decisions have been taken in phasing out asbestos, as the study on the asbestos factory workers is not completed. Thus, there were no actions to discuss in a second round.

Lessons learned and Sustainability

CEJ is one of the few NGOs that work in chemicals management in Sri Lanka. Awareness raising on chemical issues is too big a daunting task to be handled by a few organizations. Limited knowledge on chemicals and lack of conviction of Ministry officials contribute to making work on Chemical Sector challenging. For example, it was difficult to convince officials on the illegality of continued importation of PCBs into the country without the proof document with the long title. For years, Customs officials insisted that "PCBs" indicate "Printed Circuit Boards" and not "Polychlorinated biphenyls".

Although NGOs are participants at discussions and meetings on chemicals management, the authorities are reluctant to acknowledge the work done by NGOs even though CEJ has demonstrated capacity in undertaking and directing information to relevant authorities to effect changes. Capacity building of more partners is needed if the efforts are to be sustained and the knowledge shared.

Most officials are keen to resolve issues on chemicals, their overuse and prevention of ill health. However, lack of sufficient resources, trained personnel and committed officers are continuous constraints.



A Green Abode at Runakanda

Project No:	**SRL/SGP/OP4/Y3/2010/04**
Grantee:	**Jaiwa Vividattwa Mithuro (Friends of Biodiversity)**
Location:	**Morapitiya-Runakanda Proposed Reserved Forest, Batahena- Batagodawila Kalukandawa GN Division, Palinda Nuwara DS Division, Kalutara District, Western Province**
SGP Contribution:	**US$ 21,171.00**
In-kind Co-financing:	**US$ 2,065.00**
Project Period:	**26 Months (March 2010 – May 2012)**
No of People Served:	**25 Families**
Focal Area:	**Biodiversity**

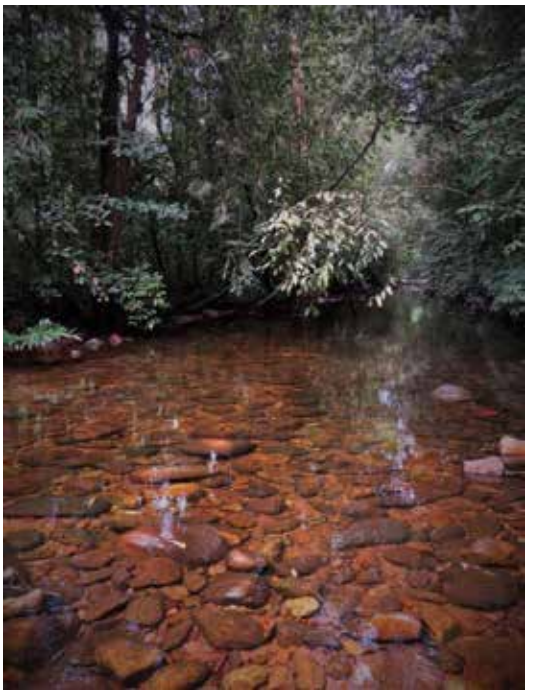
Background

The Morapitiya-Runakanda Proposed Reserved Forest is a tropical rainforest patch in the Kalutara District. Rising 477 meters above sea level, it is the birth place of a large number of small springs, which give life to several streams which come together to form the Maguru Ganga (Maguru River).

Aquatic life found in the Maguru Ganga is exceptionally rich and some of its sites are extremely sensitive, since they are the only remaining habitats of some of Sri Lanka's rare varieties of fish such as the Redneck Goby *(Schismatogobius deraniyagalai)* and Lipstick Goby *(Sicyopus jonklaasi)*. The rare and the largest of all endemic fish of Sri Lanka, the Giant Snakehead *(Channa ara)*, swims in these pristine waters. It is obvious that the fish species in Maguru Ganga and the tributary streams are abundant due to the pollution-free waters. In general, the profuse flora and fauna add to the rich biodiversity of the forest.

It is home to several species of birds, mammals, reptiles, amphibians, butterflies and fish. These include the majestic Sri Lanka Blue Magpie *(Urocissa ornata)*, the endangered Dry Zone Slender Loris *(Loris tardigradus tardigradus)*, the highly venomous Sri Lankan Krait *(Bungarus ceylonicus)*, the endemic Sri Lankan kangaroo lizard *(Otocryptis wiegmanni)* and the graceful Sri Lanka Tree Nymph *(Idea iasonia)*, to name a few from a total of nearly 200 species.

The Runakanda Forest spans 4,500 hectares and was previously part of the main Sinharaja rainforest. It is separated from the Sinharaja Forest Reserve despite its close proximity owing to large scale deforestation stemming from the introduction of highland tea cultivation in 1984. The tea project caused massive human migration and activities leading to the gradual depletion of the forest. Growing encroachments into the forest over decades resulted in allocating land for encroachers within the forest area, affecting its status as a reserve forest. At present, Runakanda can be termed a secondary forest, even so, a vast biological wealth is found within. The community surrounding the forest is dependent on the incomes of tea cultivation. Due to low production/harvest rates of tea, the community continues to deplete precious forest resources in the hopes of expanding the cultivation area.



Pristine waters found in the Morapitiya-Runakanda Proposed Reserved Forest

Scenery from the Morapitiya-Runakanda Proposed Reserved Forest

Project Objectives and Key Activities

Jaiva Vividathwa Mithuro (JVM) or Friends of Biodiversity is an NGO that has a primary objective of conserving the proposed Runakanda Forest Reserve. Headed by a Herpetologist and wildlife photographer, the team has been studying and collecting information on the existing biodiversity of the area. With the GEF SGP funding, JVM could extend their efforts in conserving the forest together with the local community. The project activities included, enrichment in 2 hectares of degraded forest land, forest boundary demarcation, agro-forestry for alternate income generation of community members, awareness raising among 400 school children in 5 schools and communities, and the establishment of an education and training centre.

JVM provided 10,000 plants from their nursery and compost to plant the 2 hectares of degraded forest land with the support of the Range Forest Office and the local community. The land area is thriving today and provide habitats for many species of animals. The increase in species is shown in the table below.

Species	No. in 2010	No. in 2015	Amount increased
Birds	90	101	11
Mammals	31	33	2
Snakes	34	35	1
Other reptiles	14	20	6
Butterflies	40	52	12

Table : Numbers of species recorded by JVM between 2010 and 2015

Prior to project interventions, the boundary from the Dikhena entrance to Runakanda was not demarcated, which led to further encroachment and provided an unsupervised area for illegal activities such as drug peddling. JVM, with the help of the Agalawatte Range Forest Office and community volunteers, established a forest boundary of 2 kilometers using 110 concrete poles with mutual agreements on boundary demarcation with those living adjacent to the forest.

One of the main drivers of deforestation was the lack of income generation means for communities in the area who would resort to felling trees for sale. In order to promote sustainable income means and to engage the community in conservation efforts, the project introduced agro-forestry activities to 25 families living in the buffer zone of the forest. A 0.05 hectare land was planted with trees such as Fishtail palm (Kitul), pepper, arecanut, mangoosteen, rambutan and mango - the produce of which have high sale value. For the small tea holders in the area, JVM introduced mechanisms that helped increase the tea harvest and thereby their sales, since low levels of tea harvest was a pressing issue among tea cultivators.

Linking up with the school environment clubs, JVM engaged students of 5 schools in the area, raising awareness on the biodiversity of the forest, endemic species, importance and need for conservation, through activities such as camping and replanting programmes. In addition to school children, community members of the Divisional Secretariat Divisions close to the forest were also provided with awareness programmes on the necessity for its conservation.

The project also funded the construction of the Runakanda Conservation Center, located in a 2 1/2 acre (1 hectare) plot. It serves as an educational and an eco-tourism centre and caters for both national and international clients. The construction of this center took place with the paid labour of several community members. Through the assistance of well-wishers, the center expanded from a two room facility to a multiple room facility and presently can accommodate up

to 8 persons. A large number of training programmes have been conducted for school children, government and non-governmental officials. the NGO uses the center as a base to conduct research and collect information on the biodiversity of the forest.

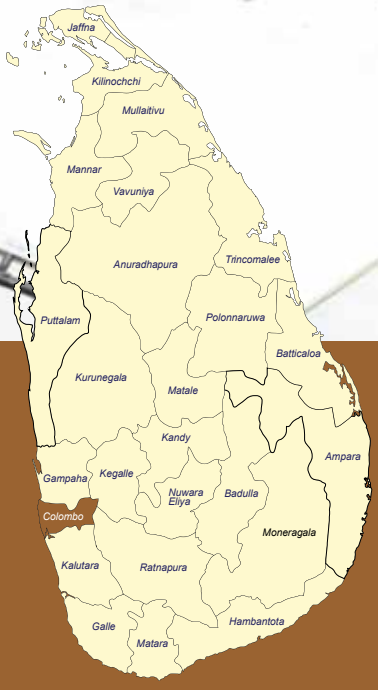
Meditation programmes for visitors

Training programmes held at the center

Lessons Learnt and Sustainability

The success of the efforts of JVM can be traced to their collaboration with relevant stakeholders such as the Forest Department Officers, Divisional Secretariats, Central Environmental Authority and the local community. The detailed baseline survey and continuous data collecting have helped in shaping a viable plan for the conservation of the forest and to keep track of the project impacts.

With regard to sustainability, the NGO has been able to successfully establish an eco-tourism mechanism, which functions successfully to date. Using social media means, JVM has been able to attract foreign and local tourists for residential training programmes. These have enabled JVM to raise funding for activities such as reforestation, payment for resource persons, continuous school programmes, and expansion of residential facilities within the center such as its 'green pit lodge' which serves as a separate outdoor residential facility to accommodate more guests. The eco-tourism initiative has also provided the community an opportunity to earn an income by providing meals, providing 'three-wheeler' transportation for visitors, acting as forest guides and selling Kitul-related products. The center also attracts many nature enthusiasts, university students, school students and researchers to engage in conservation studies. The increase in popularity of the center raises awareness of the need to conserve the Runakanda Forest, which in turn increases the lobbying for its recognition as a reserved forest area. The significant reduction of encroachment by villagers by offering income alternatives and awareness have resulted in the success of the conservation efforts and an increase in biodiversity. JVM continues their endeavors and is hopeful of establishing an animal hospital, which is an urgent need for the area.



Mobilizing Citizens Towards Minimizing E-Waste

Project No:	**SRL/SGP/OP5/STAR/CH/2014/06**
Grantee:	**Emotional Intelligence and Life Skills Training Team - E-life Skills Training Team**
Location:	**Colombo South Municipality, Western Province**
SGP Contribution:	**US$ 26,996.00**
In-cash Co-financing:	**US$ 4,625.00**
In-kind Co-financing:	**US$ 6,350.00**
Project Period:	**14 Months (05/2014 – 07/2015)**
No of People Served:	**1699 Individuals**
Focal Area:	**Chemicals**

Background

Electronic waste or e-waste refers to discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling, or disposal are considered as e-waste. E-waste is a growing global environmental issue owing to improper discarding techniques. Most discarded electronics end up in landfills, which in turn causes heavy metals such as Lead, Mercury and Cadmium to leach into the soil and water. It is estimated that globally, more than 20 million tons of e-waste is produced every year. Consumption of electronics is on the rise, producing more e-waste than can be handled with care and caution. China discards around 160 million electronic devices a year. Some of the e-waste in developed countries are shipped overseas, where it is dumped in junkyards mostly in the African continent, on unsuspecting populations. Some of those employed in stripping these to obtain parts are unaware of the dangers of this work. In some cases, child labourers are given the task of burning the waste.

Electronic Waste also known as e-waste

According to the World Health Organization, e-waste-connected health risks may result from direct contact with toxic substances such as lead, cadmium, chromium, brominated flame retardants or polychlorinated biphenyls (PCBs) from inhalation of noxious fumes, as well as from accumulation of chemicals in soil, water and food. In addition to its hazardous components, e-waste when recycled can give rise to a number of toxic by-products likely to affect human health. Furthermore, informal recycling activities such as dismantling of electrical equipment without protection may potentially bear an increased risk of ill health.

The e-waste problem, though largely undiscussed in the Sri Lankan context, is becoming significant with increased use of devices by a fast urbanizing population. In Colombo, the commercial capital of Sri Lanka, a large proportion of e-waste is often shredded, burned, and dismantled in backyards of home-based industries. Discharges from these disposal practices are damaging the environment as well as health of those exposed to the substances directly. The lack of awareness and improper disposal requires interventions to educate the population on how to handle e–waste. The E-life skills training team, an NGO dedicated to capacity building of youth, formulated an initiative to specifically address the e-waste problem in the Southern Colombo Municipality area.

Objectives and Activities

The project had the objectives of conducting awareness on e-waste management in 5 selected leading schools in the Colombo Municipal area through campaigning and the active participation of a targeted group of school goers, explore possibilities of including e-waste management concept in the school curriculum and introduce value-added products from discarded e waste.

Winners of the competition "Be a Change Maker"

School children selected from 5 schools were engaged in multiple tasks to raise awareness on e-waste management, a concept that was previously unknown to them. A website (www.eilifeskills.org) was developed. Social networking sites such as Facebook was also used and media programmes were initiated to raise awareness on the proper disposal of e-waste in several popular Sinhala and Tamil channels and newspapers. Under the theme "Be a Change Maker", a competition was launched, open to school children island-wide, for poster, art and 30 second videos on the theme of e-waste management. The competition received wide public attention and selected entries were presented awards.

E-waste collecting bins were distributed in the five selected schools in Colombo, initiating e-waste collection points. In addition to schools, a model e-waste collecting point was established at the National Institute of Education, Maharagama. To ensure further awareness on e-waste, the E-life skills training team advocated the inclusion of e-waste management lessons in school text books. To achieve this objective, workshops were organized for the academic staff of the National Institute of Education (NIE) to emphasize the importance of including e-waste related lessons in the Science stream curriculum. The lessons are expected to be included in the Grade 9 science text books in the coming year. In addition, awareness programmes on e-waste were held for the provincial level-teaching advisors. Two-day workshops for school curriculum developers, provincial coordinators and Colombo District in-service advisers of the NIE was also held.

The project also completed a survey and an analysis of the life cycle of e-waste in the Southern Colombo Municipal area. Based on the findings of the survey, further awareness programmes were conducted for civil society organizations and small business enterprises in the area. A door-to-door e-waste collection service and a network were established in the area to collect e-waste

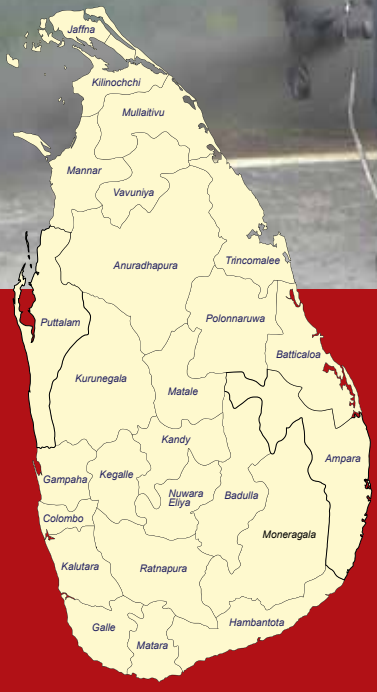
from over 160 small shops and 40 private companies. More than 5.5 tons of e-waste were collected during the project period and is being continued up to date. The collected e-waste was estimated to contain more than 65 kilograms of heavy metals and hazardous chemicals. It is at present being stored at the e-waste processing centre in Boralesgamuwa, Colombo, which is licensed to store and process e-waste. The project also developed a low energy consuming bulb (LED bulb) by using extracted parts from e-waste such as computer motherboards. The SOS Children's Village in Piliyandala, which is a support center for needy children, is at present using them as a demonstration.

Collection truck for e-waste

The LED bulb created by e-waste

Lessons learned and Sustainability

The baseline information gathered at the start of the project revealed that the majority of the people in the Colombo South Municipal area are unaware of the problem of e-waste, in particular its proper disposal methods. Since e-waste is silently becoming a big environment problem in Sri Lanka, a change of attitude of the public is crucial in addressing the issues and in ensuring a more sustainable e-waste management method. The inclusion of school children to take leadership in addressing e-waste concerns is noteworthy as it enables healthy and environmentally sensitive practices inculcated in the minds from a young age. This would be further strengthened by the proposed inclusion of e-waste management in the Grade 9 Science textbooks. Recycling of parts of e-waste for other purposes such as the manufacturing of LED bulbs is one way to minimize the growing amounts of e-waste, which is a commendable exercise. The e-waste processing center functions to date, thus continuing the project efforts. The success of this project should be attributed to the NGO's efforts in collaborating with multiple stakeholders such as the municipalities, schools and other NGOs in the area, building partnerships for a longer lasting effort at addressing a problem which has received little attention so far.



Greening the Transport Sector in Sri Lanka through Vehicle Emission Testing Certification

Project Nos:	**SRL/06/23**
Grantee:	**Clean Air Sri Lanka**
Location:	**Island wide**
SGP Contribution:	**US$ 19,450.00**
In-Cash Co-Financing:	**US$ 14,712.00**
In-Kind Co-Financing:	**US$ 5,961.00**
Project Period:	**20 Months (03/2007 – 11/2008)**
Focal Area:	**Climate Change**

Background

Unlike many of its Asian neighbours, Sri Lanka is fortunate that it has not yet experienced acute air quality problems as a result of industrial expansion and rapid urbanization. Presently, vehicular transport is the sub-sector that is most responsible for air pollution in the country, especially within the urban settings, as there is a sharp growth in the number of vehicles entering the road network each year. Besides the pollution caused by the increased number of vehicles, additional impacts arise from traffic congestion, where excessive quantities of pollutants are discharged by idling and slow-moving vehicles. Vehicle exhausts release noxious gases and particulate matter and it is well established that these substances in the air we breathe can lead to respiratory and cardiac diseases.

Realizing the threat of vehicle emissions to the public health and the overall economy of the country, a concerned citizen filed a fundamental rights case in 1998 which resulted in the Supreme Court ordering the Ministry of Forestry and Environment to prepare and regulate Vehicle Emissions, Fuel and Importation Standards of vehicles. The Vehicle Emission Testing (VET) programmes are the outcome and the response to the court order. The Ministry gazetted the regulations GE 1137/35 for Air Emissions, Fuel and Vehicle Importation Standards under the National Environment Act in June 2000, amended in 2003. Thereafter, a number of steps were taken by the Government to create a suitable mechanism to enforce the regulations namely, the establishment of the Air Resource Management Centre (AirMAC) as a multi-stakeholder organization to formulate regulations and policies related to air quality in Sri Lanka.

The VET programmes were implemented by the Commissioner of Motor Traffic through Revenue License procedures. The annual revenue license issued by the Provincial Commissioner of Motor Traffic through the Divisional Secretariat office, was issued to vehicles with vehicle emission test certificates, indicating that the vehicles meet the exhaust emission standards. In this regard, emission testing stations were established to issue the emission certificates to the vehicles, which are mandatory for renewing the annual revenue license of a vehicle. The vehicle owners, whose vehicles fail to meet the standards were instructed to get their vehicles serviced through garages registered under this programme.

This being a massive national level programme, VET needed to receive widespread public awareness. Prior to the implementation of the programmes, all stakeholders linked to this process were required to undergo training. The process involved technical personnel of the Motor Traffic Department, the Police and other related training institutions as well as motor mechanics in repair shops and service stations which are mainly run by the private sector. To achieve success in the mammoth tasks, the cooperation and collaboration of the donor community including the GEF-SGP, was essential.

Objectives and Activities

The main objective of Clean Air Sri Lanka was to facilitate the implementation of the VET programme successfully, through improving the general and technical knowledge of key stakeholders of Vehicle Emission Testing and related issues, capacity building of resource personnel in technical training institutes on matters related to vehicle emission testing and creating awareness among the general public on vehicle emission testing.

Clean Air Sri Lanka organized 18 roadside Vehicle Emission Testing programmes in 10 districts with the assistance of technical officers in the Automobile Engineering Training Institute, Ceylon German Technical Training Institute, the Department of Motor Traffic, the Air Resource Management Center of the Ministry of Environment and Natural Resources, Department of Traffic Police and CleanCo Lanka (Pvt.) Limited.

Roadside vehicle emission testing programmes

Demonstration programmes for police officers

One thousand and twenty petrol and diesel vehicles were checked in the process. In the petrol vehicles, the hydrocarbon and carbon monoxide emission levels were tested, while diesel vehicles were checked for their Smoke Opacity. Of the diesel vehicles, 22% dual purpose vans exceeded the permitted emission levels and two-stroke-engine three wheelers were the most polluting petrol vehicle. During the programme testing period, leaflets were distributed for awareness raising on the new policy change with regard to mandatory emission testing for renewing their licenses.

Twelve VET demonstration programmes were conducted for 460 Traffic Police officers in 60 police stations. A special technical training was provided to 40 officers of the Measurement, Units and Standards Department, 40 examiners of Motor Vehicles in the Department of Motor Traffic and 24 trainers of Technical Colleges. Sixteen awareness workshops were conducted for 270 administrators from District and Divisional Secretariats, and local authorities in 16 districts including Colombo, Gampaha, Kalutara, Kurunegala, Kegalle and Ratnapura. Awareness workshops were conducted for 140 teachers in Western Province schools.

Lessons Learned and Sustainability

The efforts by the NGO Clean Air Sri Lanka, became more fruitful when linkages were made with relevant stakeholders, especially the Government. Clean Air Sri Lanka's close link with the Ministry of Environment assisted in taking the activities forward in a timely manner. Most importantly, these activities facilitated a policy change which ensures long term benefits and is a step towards a cleaner Sri Lanka.

A major lesson learned is that public policy related programmes are most successful when there is centralized technical support as well as collaboration with all relevant stakeholders including the Government, private sector, the community as well as donors. Prior to the strict enforcement of a law, the general public need to be adequately made aware of the process, while ensuring that relevant supporting elements such as certified service stations and trained mechanics are in place. The GEF-SGP funding contributed significantly in achieving these goals.

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