Partners in Sustainable Development:

Empowering Civil Societies Through SGP

MALAYSIA

SGP The GEF Small Grants Programme

PARTNERS IN SUSTAINABLE DEVELOPMENT:
EMPOWERING CIVIL SOCIETIES THROUGH SGP

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COVER PHOTOS:
Community consultation (top) and laying of penstocks (bottom) for the micro hydro construction at Kampung Mudung Abun, Belaga District, Sarawak

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Dr Sundari Ramakrishna and Lee Kian Foh are the authors, and have compiled the project write-ups based on inputs and discussions with project grantees and implementers.

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Foreword

The Global Environment Facility Small Grants Programme (GEF – SGP) has been operating in Malaysia since its inception in 1999 and has funded more than 90 projects led by civil society organisations (CSOs) from various segments. On behalf of the Government, I am glad to note with appreciation the contribution made by SGP over the years; in particular, complementing the Government's initiatives in addressing environmental imperatives through communities participation. Indeed, the CBOs, NGOs and CSOs have become vital partners in moving forward the nation's efforts in protecting and conserving the environment and natural resources and maintaining the fine balance between human needs and sustainable development. In this regard, the SGP has been playing a crucial role, particularly in enhancing the capacities of participating CBOs, NGOs and CSOs to lead and be responsive towards the actions and interventions made at the local level.

It is motivating to see the interaction amongst different aspects of focal areas which include biodiversity, climate change, land degradation and how they have helped in the empowerment of local communities to address the issues at local levels whilst also generating global benefits. The activities covered by SGP are wide ranging, whether it is through revival of traditional medicine; alternative energy sources; small group based enterprises or through ecotourism, and have been directly targeted towards realising the benefits of focus groups whilst addressing the environmental concerns. This has been not only complementary to the government initiatives but has also contributed greatly in achieving the nation's environmental objectives as described in the various policy instruments. There are many examples and cases of SGP projects demonstrating the potentials for up-scaling, replication and further enhancement of the results and policy impacts at local and community level to the state and national levels.

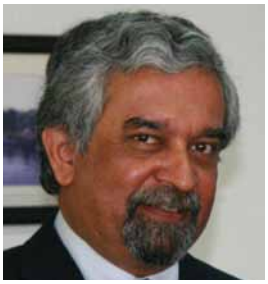
Though SGP is designed specifically to support civil societies' efforts in addressing environmental issues, its role in supporting some specific activities that helped uplift the standard of living of the rural communities deserves special mention. One particular activity is the construction of micro-hydro generating electricity utilising renewable resources and supplying clean energy to rural households in a number of villages in Sabah and Sarawak. This activity has demonstrated vividly how the SGP projects could help empower the rural and local communities through proper training and impart of knowledge in maintaining presumably a complex system on their own. I understand that the success and the positive impacts generated by this activity have even attracted the interest of some private enterprises to fund such projects under their corporate social responsibility.

This document highlights the results and impacts of SGP projects in Malaysia over the past ten years by evaluating twenty of them. It clearly demonstrates how small funds can make valuable contributions and a "significant difference" to the quality of life at some grassroots level and promote policy intervention and initiatives at local and community levels with potentials for generating national and global environmental benefits. Larger funding and flexible approaches and expanded outreach to smaller and rural civil societies and continued efforts to strengthen the programme reflect well for the future of SGP in Malaysia.

I would like to record my appreciation to the Small Grants Programme (SGP) Malaysia in producing this beneficial document.

DATO SRI DOUGLAS UGGAH EMBAS
MINISTER OF NATURAL RESOURCES
AND ENVIRONMENT MALAYSIA

Message from UNDP



It is my pleasure to pen this message on behalf of UNDP to commemorate the publication of "*Partners in Sustainable Development: Empowering Civil Societies Through SGP*", highlighting Malaysia's experience in the Small Grants Programme (SGP) over the past ten years. Since its inception in 1999, the SGP has become an integral part of the overall UNDP country programme in Malaysia.

The Global Environment Facility Small Grants Programme (GEF SGP) has a global role in environmental protection and sustainable development. In this regard, UNDP is pleased to note the significant role played by SGP in supporting a number of community-based sustainable development initiatives all around the world. In numerous cases and instances, SGP projects provide good practice examples of how to translate the outcomes of local level interventions into policy at various levels. Some such examples are vividly illustrated in this document.

By being small and community-focused and with its flexible approach, SGP has positioned itself strategically to reach out to small rural communities more effectively. Indeed, the SGP has made significant contributions towards strengthening the capacities of local communities particularly in rural and remote, isolated areas by engaging them in environmental protection initiatives. This is evident from the work of more than sixty community based and civil society rooted SGP partners, who, together, reflect a wide spectrum ranging from well established internationally renowned NGOs to rural community based development organisations.

UNDP recognises that SGP has a special role to play in Malaysia's context. Malaysia has made significant progress in important developmental areas since its independence in 1957: poverty eradication, economic growth, education and health. However, Malaysia is relatively weak in terms of both community based and civil society engagement and initiatives, including but not limited to environmental protection. SGP, to a modest extent, has helped to fill this void. SGP's community based actions also comprise a key component of UNDP's efforts towards achieving the MDG targets on environmental sustainability.

This document aims to highlight and share some of the SGP's noteworthy actions, results and outputs; but it also reflects many of the shortcomings and weaknesses resulting from SGP projects during this period. Whilst the positive examples provide inspiration, others are viewed by us as challenges and a guide for the future continuous strengthening of the programme.

Best wishes,

Kamal Malhotra
UN Resident Coordinator
UNDP Resident Representative

Executive Summary

SGP The GEF Small Grants Programme

This document *Partners in Sustainable Development: Empowering Civil Societies Through SGP* presents a cursory review of Malaysia's experience in implementing the Small Grants Programme (SGP) over ten years. The programme started in 1999 and thus far has funded more than 90 projects including both full and planning grants. More than 60 NGOs and CBOs representing various segments – ranging from well-established organisations, such as WWF, to local community organisations located in rural and remote parts of the country – have joined SGP as project partners.

In line with the Global Environment Facility (GEF) thematic focal areas, SGP Malaysia projects were focused on biodiversity and climate change. The analyses of the twenty projects selected for this review is categorised under five aspects: capacity building; pilot or demonstration project; promoting application of renewable energy; awareness raising; and alternative livelihood. These analyses show pre-existing circumstances, capture benefits of the projects; and highlight the post-completion situation.

Some projects strived to demonstrate new ideas, approaches and methods. For instance, the project by the Foundation for Agriculture, Environment and Education (ECOFARE) tried to demonstrate an integrated scheme for the conservation and sustainable use of rice biodiversity involving the indigenous rice-growing communities of Tanjung Purun, Skuduk and Chupak in Sarawak. Innovations that were introduced enabled farmers to increase their revenue through increased planting density, use of biofertilisers, a retractable roof for sun-drying rice, and utilisation of a micro-mill to maintain the quality of inputs.

Similarly, the project by the Marine Research Foundation (MRF) was aimed at studying the effects of turtle excluder devices (TEDs) on catches, by-catches and turtle conservation in the Sandakan area. It is the first study on using TEDs in Sabah, and was strategic in linking the state department of fisheries, the fishing community and the scientific and research community. The experience and results of the project have the potential to provide valuable inputs for decision making by the state government in determining fishery practices to conserve marine turtles.

The project on *Local Community-Based Ecotourism and Conservation Training Among Indigenous Semai of Ulu Groh, Gopeng, Perak,* demonstrated both elements of capacity building of the rural community and creating alternative sources of income through sustainable use of natural resources. As a result of SGP's intervention, the *Semai* indigenous people were equipped with necessary skills to develop ecotourism packages and operate these as a business with the engagement of the local community.

Community-based natural resource management involving a community forest in Hulu Kadamaian, Kota Belud, Sabah, was undertaken by GOMPITO. The project aimed to establish a community reserve; to strengthen the capacity of the local community for biodiversity conservation, natural resource management and its sustainable use; and to formulate additional income generation from these community natural resource bases. It is an example of "bottom-up" approaches exemplifying local community policy intervention that could complement the government's efforts in natural resource conservation and its sustainable use.

The turtle biodiversity conservation project undertaken by MEKAR, a community-based organisation in the Ma' Daerah community in Terengganu, encouraged the various groups of stakeholders within the local communities in the towns of Kerteh, Paka and Kemasek to do their part for the cause. Innovative approaches taken by MEKAR, including using religious channels to disseminate the message, have been recognised by the Terengganu state authorities. The project by TrEEs focused on raising awareness of sustainable lifestyles through recycling and the importance of biodiversity. This resulted in the establishment and replication of community biodiversity centres. The project by CETDEM to increase awareness and build the capacity of urban Malaysians on sustainable energy options supplemented the efforts of the government to motivate relevant target groups to assess options for adopting renewable energy and energy-efficient practices.

Some projects managed to influence local government decisions and policy formulation. A platform for the management of an urban park was created under a project by the Residents' Association of Section 9 (RAS 9) Kota Damansara. As a result of local residents' advocacy, the project ultimately led to the gazettement of a Forest Reserve.

In the SGP projects portfolio, the micro hydro projects implemented in the rural and remote parts of the country, particularly Sabah and Sarawak, have made significant impacts in the lives of the rural communities. Whilst promoting generation of electricity from renewable water resources, the projects helped to improve the quality of life of the rural communities in several ways: supply of clean energy; eliminating use of fossil fuel and pollution; cost savings arising from reduced use of fossil fuel; and the creation of additional income-generating opportunities. Most importantly, these activities have demonstrated vividly how SGP projects have empowered rural and local communities through proper training and sharing of knowledge to maintain the system on their own.

Certain projects faced difficulties due to changing conditions and circumstances. The project *Semporna: Conserving Biodiversity Through Capacity Building* had a component to assist in giant clam aquaculture. However, it evolved into development of a seaweed manual instead – based on a later assessment that cultivation of seaweed would be more practical and suitable. Such a change demonstrates the flexible approach practiced by SGP, and the ability of the grantee to internalise the changes that occur during the project period. Hence, the intention remained, while activities were adapted to address relevant issues faced by the community.

The flexibility and simplified procedures applied by SGP in managing the country programme have been effective formulas for achieving significant positive results and impacts, and for reaching out to rural communities. Based on these 20 projects, there is a wealth of knowledge and experience that could be learnt and shared for further improvement of the programme.

Muthusamy Suppiah
National Coordinator
GEF SGP Malaysia

Section 1: Introduction

Global Environment Facility – Small Grants Programme (GEF-SGP) Malaysia formally commenced operations in July 1999. In line with global SGP objectives, GEF-SGP Malaysia is oriented towards supporting interventions by Malaysian non-governmental organisations (NGOs), community-based organisations (CBOs), civil society organisations (CSOs) and local communities in their efforts to protect and conserve the environment and biodiversity.

The primary objectives of GEF-SGP Malaysia include:

- supporting outreach and awareness-raising activities among Malaysian NGOs, CBOs, CSOs and Indigenous People's Organisations on global and national environmental concerns;
- building the capacities of NGOs, CBOs and local communities to address such environmental concerns; and
- providing a mechanism for demonstrating and disseminating community-level or community-led interventions and solutions to such environmental concerns.

GEF-SGP Malaysia provides opportunities for project applicants to "think globally, act locally" by allowing them to address common global concerns and issues at their local level. Since its inception, GEF-SGP Malaysia has successfully funded more than 90 projects primarily focused on two GEF focal areas: biodiversity and climate change. These include full projects, as well as planning grants implemented by various NGOs, CBOs and CSOs with a total fund allocation of USD 3.6 million (RM 10.8 million)[1] from 1999 until 2010. The full list of projects may be viewed at http://sgpmalaysia.org/.

Overview of Projects

The 20 projects documented in *Partners in Sustainable Development* represent the spectrum of projects that were initiated from 2000 to those that were completed in August 2010. Distributed over various parts of Malaysia, these projects involved both urban and rural communities. The map shows the names and locations of these projects.

[1] USD 1 = RM 3

1. **Supporting Sustainable Livelihood of Local Inshore Fishing Communities via Sustainable Indigenous Fisheries While Promoting the Conservation and Sustainable Use of Fishery and Mangrove Ecosystem Biodiversity: Moving from Critical Awareness to Remedial Action**

2. **Local Community-Based Ecotourism and Conservation Training Among Indigenous Semai of Ulu Groh, Gopeng, Perak**

3. **Public Outreach and Capacity-Building Programme on Conservation and Sustainable Use of the Biodiversity of Taman Botani Kota Damansara**

4. **Increasing Awareness and Building Capacity of Urban Malaysians on Sustainable Energy Options**

5. **Pilot Project on Forging Urban Community Links for the Conservation and Sustainable Use of Biodiversity**

6. **Conservation and Sustainable Use of the Biodiversity at Sedili Kechil River Basin**

7. **Returning a Malaysian Natural Heritage of Giant Clams to Johor Islands**

8. **Enhancing the Skills and Capacity of SABOT to Promote, Implement and Manage Ecotourism Enterprises**

9. **Turtle Biodiversity Conservation Through Active Participation of the Ma' Daerah Community**

10. **Community-Based Conservation of Biodiversity in Sungai Nenggiri, Kelantan**

Project Locations

11 **Increasing Biodiversity-Based Sustainable Opportunities for Single Mothers in Kelantan, Focusing on Essential Oils and Medicinal Herbs and Plants**

12 **Mainstream Efforts to Sustain the Mangrove Ecosystem Biodiversity in Providing Livelihood for Local Communities in Sematan, Sarawak**

13 **Conservation and Sustainable Use of Rice Biodiversity: An Integrated Project Involving the Indigenous Rice-Growing Community in Tanjung Purun, Sarawak**

14 **Community Participation in the Sustainable Management and Fishing of Terubok in Daro, Sarawak**

15 **Integrated Community-Based Micro Hydro System to Improve Sustainability Livelihood of Indigenous Kenyah Community in Mudung Abun, Belaga District, Sarawak**

16 **Promoting Demonstrational Plots of Medicinal Plants and Herbs Biodiversity and Their Related Traditional Knowledge**

17 **Community-Based Micro Hydro and Watershed Conservation for Kampung Buayan, Penampang, Sabah**

18 **Community-Based Natural Resource Management in Hulu Kadamaian, Kota Belud, Sabah**

19 **Improving Sustainable Livelihood of Fishermen and Conservation of Marine Biodiversity: Reduction of Sea Turtle By-Catch in Commercial Fisheries in Sandakan, Sabah**

20 **Semporna: Conserving Marine Biodiversity Through Capacity Building**

Each project summary was based on a review of the project's completion report, visit to the project site, and discussions with those involved in project implementation. The findings are drawn from the facts and situations presented to the authors during their project site visits between November 2010 and August 2011. The summary highlights three main aspects: circumstances prior to the project, implementation of project and its benefits; and the situation after project completion. Hence, these project summaries represent post-project documentation from first-hand observation and conversations with some of the project stakeholders.

Based on the review of the projects, it was found that each community faced internal and external challenges that were unique to their circumstances. In a nutshell, these projects had at least one of these five core elements: capacity building, pilot or demonstration project, promoting application of renewable energy, raising awareness, and alternative livelihood. The table on pages 14 and 15 presents the core elements of each project.

CAPACITY BUILDING

Capacity building is the main component of majority of the projects. This is targeted at increasing the capability of project grantees or the local community. Various activities, such as training, workshops, seminars and study visits, were carried out to ensure that relevant stakeholders acquire the relevant knowledge, understanding, skills and experience to achieve project goals. In other words, this element represents the enabling and empowering aspect of the project.

PILOT OR DEMONSTRATION PROJECT

Several projects strived to pilot and demonstrate ideas, approaches and methods to improve on current practice by local industry and community. For instance, MRF conducted the first-ever study of turtle excluder devices on fisheries catches, by-catch reduction and turtle conservation in Sabah; ECOFARE tried to demonstrate an integrated scheme for the conservation and sustainable use of rice biodiversity; and IDS developed demonstration plots for medicinal plants and tested commercial domestication of herbs in Sabah.

PROMOTING APPLICATION OF RENEWABLE ENERGY

Several projects were focused on the application of renewable energy technology by local communities. The community-based micro hydro systems implemented by TONIBUNG in Kampung Buayan, Penampang, Sabah, and by IPIMAS in Mudung Abun, Belaga, Sarawak, enabled these communities to tap into natural resources nearby. Two other projects also had elements of renewable energy technology, but these were incidental. Solar technology was applied in two projects: i) solar-hybrid systems installed by WWF-Malaysia to power IT centres in two primary schools in Semporna, Sabah; and ii) solar panels installed by TrEES in its Biodiversity Community Centre in Subang Jaya, Selangor.

ALTERNATIVE LIVELIHOOD

This element is necessary to ensure that local communities are able to derive benefits from protecting and sustainable management of the natural resources around them.

Projects that addressed the concern of alternative livelihood involved communities living near natural resources, such as mangrove and coastal ecosystems, forests, rivers and wetlands.

The efforts made by CAP in conservation and sustainable use of mangroves resulted in increasing the income of local inshore fishermen communities in Penang. AZAM's project in Sarawak encouraged local villages at Kampung Sematan to explore sustainable livelihoods based on the conservation of their mangrove ecosystem. The components of alternative livelihood in SDI's project in Daro, Sarawak, were mainly aimed at reducing the communities' dependence on *terubok* fishing in order to reduce pressure on the fish population. The MNS project in Ulu Groh enabled the *Semai* community to embark on ecotourism. The projects by SABOT, WI and SSN also addressed enabling factors to introduce ecotourism as an alternative livelihood. Apart from these, the project by WIJADI addressed livelihood concerns as it was aligned with WIJADI's objective to assist and uplift the lives of single mothers.

AWARENESS RAISING

All projects indirectly involved elements of awareness raising for their stakeholders. It is usually the first step in getting stakeholders together towards a common and shared goal.

Several projects had awareness raising as their main goal. For instance, CETDEM's project targeted at urban Malaysians raised awareness on the potential of sustainable energy usage. RAS 9 needed to raise awareness about environmental concerns to save Taman Botani as a Community Forest Park in Kota Damansara, Selangor. MEKAR's awareness-raising campaigns were targeted at the local community on all issues related to marine turtles and their conservation and survival in Ma' Daerah, Terengganu.

A workshop entitled *Sharing of Experiences of SGP Projects and Brainstorming on Sustainability After Project Implementation* was held on 18-19 April 2011 to facilitate sharing of experiences on these 20 projects. Representatives from 13 of the 20 projects attended the workshop, and the discussions at this gathering contributed to Section 3 of *Partners in Sustainable Development*. ■

CORE ELEMENTS OF PROJECTS

No.	GRANTEE	PROJECT	ELEMENTS				
			Capacity Building	Pilot or Demonstration Project	Promoting Application of Renewable Energy	Raising Awareness	Alternative Livelihood
1	Consumers' Association of Penang (CAP)	Supporting Sustainable Livelihood of Local Inshore Fishing Communities via Sustainable Indigenous Fisheries While Promoting the Conservation and Sustainable Use of Fishery and Mangrove Ecosystem Biodiversity: Moving from Critical Awareness to Remedial Action	✓			✓	
2	Malaysian Nature Society (MNS)	Local Community-Based Ecotourism and Conservation Training Among Indigenous Semai of Ulu Groh, Gopeng, Perak	✓				✓
3	Residents' Association Section 9 (RAS 9) Kota Damansara	Public Outreach and Capacity-Building Programme on Conservation and Sustainable Use of Biodiversity of Taman Botani Kota Damansara	✓			✓	
4	Centre for Environment, Technology and Development, Malaysia (CETDEM)	Increasing Awareness and Building Capacity of Urban Malaysians on Sustainable Energy Options	✓			✓	
5	TrEES (Treat Every Environment Special)	Pilot Project on Forging Urban Community Links for the Conservation and Sustainable Use of Biodiversity		✓	✓	✓	
6	Wetlands International (WI) Malaysia	Conservation and Sustainable Use of the Biodiversity at Sedili Kechil River Basin	✓				✓
7	Universiti Sains Malaysia (USM)	Returning a Malaysian Natural Heritage of Giant Clams to Johor Islands	✓	✓			
8	Semelai Association for Boating and Tourism (SABOT)	Enhancing the Skills and Capacity of SABOT to Promote, Implement and Manage Ecotourism Enterprises	✓				✓
9	MEKAR (Ma' Daerah Community Conservation Association)	Turtle Biodiversity Conservation Through Active Participation of the Ma' Daerah Community	✓			✓	
10	Sahabat Sungai Nenggiri (Friends of Nenggiri River)	Community-Based Conservation of Biodiversity in Sungai Nenggiri, Kelantan	✓				✓
11	WIJADI (Wanita Innovatif Jayadiri/ Empowered Innovative Women)	Increasing Biodiversity-Based Sustainable Opportunities for Single Mothers in Kelantan, Focusing on Essential Oils and Medicinal Herbs and Plants	✓	✓			✓

No.	GRANTEE	PROJECT	ELEMENTS				
			Capacity Building	Pilot or Demonstration Project	Promoting Application of Renewable Energy	Raising Awareness	Alternative Livelihood
12	AZAM (Angkatan Zaman Mansang/ Movement for Progress)	Mainstream Efforts to Sustain the Mangrove Ecosystem Biodiversity in Providing Livelihood for Local Communities in Sematan, Sarawak	✓				✓
13	Foundation for Agriculture, Environment and Education (ECOFARE)	Conservation and Sustainable Use of Rice Biodiversity: An Integrated Project Involving the Indigenous Rice-Growing Community in Tanjung Purun, Sarawak	✓	✓			
14	Sarawak Development Institute (SDI)	Community Participation in the Sustainable Management and Fishing of Terubok in Daro, Sarawak	✓				✓
15	IPIMAS (Institut Pribumi Malaysia Sarawak/Indigenous People's Institute Malaysia Sarawak)	Integrated Community-Based Micro Hydro System to Improve Sustainability Livelihood of the Indigenous Kenyah Community in Mudung Abun, Belaga District, Sarawak	✓		✓		
16	Institute for Development Studies Sabah (IDS)	Promoting Demonstrational Plots of Medicinal Plants and Herbs Biodiversity and Their Related Traditional Knowledge	✓	✓			
17	TONIBUNG (Friends of Village Development)	Community-Based Micro Hydro and Watershed Conservation for Kampung Buayan, Penampang, Sabah	✓		✓		
18	GOMPITO (Conserving Heritage for Future Generations)	Community-Based Natural Resource Management in Hulu Kadamaian, Kota Belud, Sabah	✓				
19	Marine Research Foundation (MRF), Malaysia	Improving Sustainable Livelihood of Fishermen, and Conservation of Marine Biodiversity: Reduction of Sea Turtle By-Catch in Commercial Fisheries in Sandakan, Sabah		✓			
20	World Wide Fund for Nature (WWF) - Malaysia	Semporna: Conserving Marine Biodiversity Through Capacity Building			✓	✓	

Project 1

SUPPORTING SUSTAINABLE LIVELIHOOD OF LOCAL INSHORE FISHING COMMUNITIES VIA SUSTAINABLE INDIGENOUS FISHERIES WHILE PROMOTING THE CONSERVATION AND SUSTAINABLE USE OF FISHERY AND MANGROVE ECOSYSTEM BIODIVERSITY: MOVING FROM CRITICAL AWARENESS TO REMEDIAL ACTION

Project Grantee: Consumers' Association of Penang (CAP)

Project Period: Phase 1: January 2001 to September 2003
Phase 2: September 2004 to February 2006

Horseshoe crab at replanted site: a sign of increase in biodiversity

BACKGROUND

The objectives of Phase 1 were to document and promote the use of indigenous or traditional knowledge and practices relating to the conservation and sustainable use of fisheries and mangrove resources, which in turn, would help sustainable livelihoods of traditional inshore fishermen. The project was executed by the Consumers' Association of Penang (CAP) with the Penang Inshore Fishermen Welfare Association (PIFWA),[2] a fisher community organisation.

In Phase 2, activities were undertaken to seek remedial action in relation to threats to biodiversity, fishery resources and sustainable livelihoods. These threats were the degradation of mangrove ecosystems, encroachment of trawling boats in the inshore areas, and pollution of river waterways. Rapid development, tourism, industrialisation and coastal reclamation have contributed to the deterioration of coastal mangroves and estuaries in Penang. For four years (from 2000 – 2004), PIFWA collected information from fishermen about the status of the coastal belt, mangroves and fish stocks in Seberang Perai. About 10 – 20 fishermen initially started replanting mangroves from 2000 to 2005. Mangroves had to be replanted because many species were going extinct. Only 2 – 3 dominant species were present at the mangrove fringes.

PROJECT GOALS

The objectives of this project were to:

- organise capacity-building workshops and train local traditional fisherfolk as eco-rangers who will serve as watchdogs to address problems of trawling, river pollution and mangrove destruction;
- organise meetings and consultations with government departments, local authorities, community leaders and schools;
- oversee and monitor the replanted mangroves to ensure that regeneration was proceeding as planned; and
- prepare and disseminate information and materials among authorities on mangrove regeneration and biodiversity.

[2] Formed in 1994, PIFWA initially had about 1,000 members but this was reduced to a core group of 30 who were committed to PIFWA's cause. PIFWA had to re-strategise as it was difficult to maintain a large membership. Since PIFWA handles transboundary issues, it still renders assistance to all fishermen regardless of membership.

IMPLEMENTATION

Mangrove Replanting

Degraded coastal areas in Penang and northern fringes of Perak's coast were replanted with mangrove seedlings. Banks of river mouths were important for rehabilitation with mangrove trees, as these river mouths serve as spawning grounds for fish and shellfish. Small nurseries were set up to provide a continuous supply of mangrove seedlings of three species of mangroves. In a year, about 5,000 mangrove trees were replanted by PIFWA members and volunteers.

Surveillance and Monitoring

PIFWA reports on sea surveillance were shared with the relevant government departments. Complaints from PIFWA members were channelled through CAP to the relevant agencies and ministries. However, despite pledges from government agencies, information in the surveillance reports was not fully acted on. Hence, success was determined on a case-to-case basis.

Regular river monitoring was conducted, and reports were sent to the Department of the Environment (DOE) for further action. Issues highlighted include pollution and loss of riverine fish species.

Evaluation & Documentation of Sea Surveillance

The evaluation workshop on the *River and Sea Surveillance Programme* for Kampung[3] Sungai Chenaam was held on 26 July 2003.

The interventions and activities of PIFWA were documented through video and photographs.

PIFWA member replanting mangrove seedlings

Collaboration with Government

PIFWA participated in many government-arranged meetings in the aftermath of the 2004 tsunami to discuss various issues, including encroachment of trawlers in the inshore fishing zone.

BENEFITS & ACHIEVEMENTS

Better Catch

The fishermen were delighted with the tremendous improvements made in 2004. Overall fish catch had improved with lesser pollution in the river and lesser encroachment by trawl fishing into the inshore areas.

Mangrove Forests

In the meantime, the mangrove forests which were replanted were well looked after by the fishermen. In each year of Phase 2, an average of 15,000 mangrove seedlings was planted in the coastal mangrove belt of Penang Island by volunteers and PIFWA members. The mangrove forests had

3 *Kampung* means 'village' in the national language.

attracted migratory birds, and a growing number of fishermen were harvesting mud crabs and molluscs from them to supplement their income.

Migrating birds are seen at the replanted site

Empowerment of Fishermen

Fishermen were empowered to take personal responsibility to rehabilitate the mangroves; to have a deeper understanding of these ecosystems; to replant on their own by watching others; and to see small achievements and the positive impact. There was an increase of livelihood income for the fishing community not only from fish harvests but also from renting of boats to anglers, carrying out river cruises especially during the firefly mating season, collection and sale of mangrove saplings, and engagement in downstream activities, such as making shrimp paste.

Two-year-old replanted Rhizophora *species*

Better Cooperation and Communication

The water quality of the river has seen much improvement as indicated by better fish and river lobster catches by the fisherfolk; and there is more cooperation from the local industry to minimise water pollution. There is also improved communication with the DOE. Biodiversity in the rivers has improved, and the number and income of riverine fishermen has also increased through harvest of freshwater and brackish-water fish.

POST-IMPLEMENTATION & SUSTAINABILITY

Endorsement for PIFWA

Recognition of PIFWA (as an organisation that caters for the welfare and livelihood of fishermen, and the conservation of mangroves) has greatly increased in the past five years, and has led to more community and corporate sector buy-in.

Awards were given by Intel, Advance Micro Device (AMD) Export, and Friends of the Earth (International) to recognise PIFWA's efforts. These awards, worth RM 30,000 (USD 10,000), would help sustain PIFWA activities.

Fishermen's Income & Welfare

There have been fewer and fewer encroachments since surveillance of the seas was carried out, but there are still sightings of trawlers in the inshore zone. The fishermen are reporting increased fish catches after project implementation.

The catches of river fishermen have increased to an average of two kilograms per person or equivalent

to about RM 60 (USD 20) per catch. There were no such harvests at the beginning of the project.

The core group of fishermen who had taken up the task of implementing project activities, have expanded their role in handling other issues pertaining to fishermen's welfare as a whole.

Coordination & Monitoring

There are regular coordination meetings among PIFWA members. Committee members are able to monitor surrounding coastal areas in the villages, and coordinate the findings or information from various sources. There is still earnestness from the local community and the fishermen to determine what happens around the Seberang Perai coast line.

PIFWA reports on the status of rivers and surrounding inshore areas were given due attention by government authorities.

There is increased cooperation to help fellow fishermen to carry out monitoring activities of the coastal sites. The fishers are motivated to work together based on the earlier successes of PIFWA.

Eco-Education Centre

A local community eco-education centre is being established to provide skills training, awareness raising and information exchange among the local traditional fisher community to enhance their respective capacities and capabilities. The centre is being set up with funds from a current Global Environment Facility-SGP project.

Community effort in replanting mangroves

PIFWA members collecting rubbish in the mangroves

Awareness & Participation of Women

There has been an increased participation and presence of women. However, more women need to take on some of the responsibilities. Prior to this (in Phase 1), there was little involvement from women due to the perceived understanding of their role. To overcome this, more meetings and efforts are needed to raise greater awareness, build more trust and confidence in the women folk so that they are not dissuaded by outside pressures. The fisherfolk community leaders have understood and appreciated the need for the active participation of women in the project.

Mangrove Shield

The tsunami of December 2004 brought recognition to the earlier work of PIFWA. Due to the lack of the vital coastal belt, and the lack of mangroves (which would act as a shield to sea waves), the tsunami flood was exacerbated with the destruction of the coast. Hence, replanting of mangroves was emphasised by both government agencies and local communities.

More support grew as a result of the lesser impact of the tsunami at Sungai Acheh where PIFWA had a presence with replanting mangroves. The evidence was clear that replanting and rehabilitating the coast provided a shield and prevented destruction to infrastructure and fisheries; and the impact on fish harvest and support to local livelihoods would be less affected.

Increased Cooperation with Government Agencies

Along with other NGOs, such as Wetlands International, WWF-Malaysia and Sahabat Alam (Friends of the Environment) Malaysia, PIFWA is a member of the committee set up under the Peninsular Malaysia Department of Forestry (DOF) to oversee rehabilitation of mangroves and replanting projects.

In 2009, RM 10,000 (USD 3,333) was given to PIFWA for mangrove rehabilitation, and this was increased to RM 20,000 (USD 6,667) in 2010 by DOF.

DOE has asked PIFWA to request the District Office – instead of DOE – for support and cooperation in taking appropriate action on encroachment of inshore fishing zones.

Replanting Mangroves

PIFWA gives information on replanting techniques to government agencies and showcases its positive efforts in public events and seminars. The community effort by PIFWA has been recognised both by the government and private sector. The fisherfolk community came together to help themselves by replanting mangroves thereby improving habitats for nursery grounds for fish by employing cost effective methods with very low investment. In summary, a collective effort by community brought about a huge impact in improving their livelihoods and enhancing the natural environment. PIFWA got the recognition as experts in mangrove rehabilitation especially after the tsunami event of December 2004, where the coastal areas that were rehabilitated by PIFWA were not impacted. The print media was also instrumental in highlighting the advantages of replanting and efforts shown by PIFWA. Soon after, the government invited PIFWA for meetings to discuss collaboration on mangrove replanting initiatives. The private sector started to fund some of the replanting programmes. ■

Project 2

LOCAL COMMUNITY-BASED ECOTOURISM AND CONSERVATION TRAINING AMONG INDIGENOUS OF ULU GROH, GOPENG, PERAK

Project Grantee: Malaysian Nature Society (MNS)

Project Period: January 2002 to April 2005

Ulu Groh is one of the most accessible spots in Peninsular Malaysia to view the Rafflesia *bloom.*

BACKGROUND

Kampung Ulu Groh is located in the Bukit Kinta Forest Reserve, Perak. The amazing thing about this place is that it is the home of the globally-threatened *Rafflesia cantleyi* (a parasitic flowering plant found only in Southeast Asia) and the *Rajah Brooke's* birdwing butterfly. Ecotourism was identified as a potential alternative income for the indigenous *Semai* community, some of whom depend on capturing butterflies and harvesting of *Rafflesia* buds and other forest products in this area.

PROJECT GOALS

- To introduce ecotourism and conservation training to the indigenous *Semai* community to conserve and sustainably manage their natural resources (*Rafflesia* and *Rajah Brooke's* birdwing butterfly) and forests surrounding Kampung Ulu Groh; and
- To prepare the indigenous *Semai* as 'stewards' of the proposed Rafflesia Sanctuary and Conservation Area. The main components of this objective were
  - to alleviate poverty among the *Semai* community through sustainable livelihoods in the form of improved income as trained nature guides; and
  - to reduce the rate of cultural erosion, and increase appreciation for the *Semai* culture and identity within their community.

IMPLEMENTATION

Ecotourism Venture

As a result of a survey on *Rafflesia* that was carried out in the project area, four sites and trails were identified and mapped. MNS formed a community group called SEMAI (*Sahabat Ekopelancongan Memulihara Alam Indah* or Friends of Ecotourism and Conserving Beautiful Nature), and assisted this newly-formed group to secure the interest and support of government agencies during project implementation. The Perak Department of Forestry

(PDOF), the Perak Department of Orang Asli Affairs (JHEOA), the Tourism Action Committee of Perak, and the Kampung Ulu Groh community were briefed about the project by MNS and SEMAI. This project, through the formation of a Project Steering Committee, also provided the platform for multi-stakeholder involvement and cooperation for ecotourism at Ulu Groh.

Exposure for SEMAI

Various training courses, including nature guiding, presentations, environmental awareness, nature interpretation, and basic management, were carried out. The Malay Guiding Association and MNS branch members were invited to provide training for SEMAI in guiding and handling visitors. The project also organised study visits to other villages and tourism sites to expose SEMAI to other related projects and communities involved in community-based ecotourism activities. These activities helped increased their knowledge, skills and confidence.

SEMAI Structure

During the project period, MNS was able to help with the organisation and structure of SEMAI, drawing up a constitution and an organisation chart with duties for members. The SEMAI committee consists of 12 members with an equal number of both genders from the three villages that comprise Kampung Ulu Groh. SEMAI holds regular meetings, does its own bookkeeping, manages a village fund, handles visitor feedback forms and indemnity forms, as well as conducts pre-briefing and registration for visitors. A logo representing the interests of the *Semai* of Ulu Groh in ecotourism was designed by its members.

One of the streams at Ulu Groh, tucked in the Bukit Kinta Forest Reserve

Community Venue

A hall for visitors and meetings was set up by renovating the ground floor of an abandoned government building. This hall is the main venue for visitor activities, and the meeting place of the Ulu Groh community.

What to Expect from Ecotourism at Ulu Groh

The programme starts with a briefing, followed by nature walks to view the *Rafflesia* and *Rajah Brooke's* birdwing butterfly sites, then lunch and bath at the nearby waterfall. The programme encouraged SEMAI to introduce *sewang*, a traditional dance usually performed to welcome guests, into their ecotourism package.

Rafflesia Hall for visitors and meetings

Sewang, *a traditional dance and song, is one of the ecotourism products offered by SEMAI*

BENEFITS & ACHIEVEMENTS

Conserving Flowers & Butterflies

Previously, *Rafflesia* buds were collected by the locals and sold for RM 0.50 (USD 0.17) to RM 1 (USD 0.34) each to a middleman, and a *Rajah Brooke's* birdwing butterfly would fetch only RM 0.50. When the *Semai* community realised that visitors were willing to pay RM 20 (USD 7) per person to view these flowers and butterflies, their decision was obvious. This project succeeded in stopping the harvesting of *Rafflesia* flowers and *Rajah Brooke's* birdwing butterflies.

Environment Stewardship

Through the building of various capacities, the local community has been empowered as stewards of the environment. SEMAI members who participated in activities were more confident and knowledgeable.

Gender Roles

In terms of social dynamics, there was increased cooperation among members of the three villages, including balanced roles for both genders.

POST-IMPLEMENTATION & SUSTAINABILITY

After SEMAI was established, MNS became an adviser to the group. MNS and SEMAI managed to secure various funds to support activities in Ulu Groh. Among others, SEMAI received a grant from the European Union-funded Small Grants Programme for Operations to Promote Tropical Forests in Southeast Asia (SGP PTF) in 2006-2007 to build the capacity of SEMAI's existing and new members in computer, advanced guiding, first aid and other skills. This capacity-building project attracted local and foreign media, such as the Japan Broadcasting Corporation (NHK) and Nippon TV. In 2009, SEMAI received a grant from the Community-Based Natural Resource Management (CBNRM) Facility, which is funded by DANIDA. SEMAI also received funds from corporate bodies, such as HSBC Bank Malaysia, Dow Chemicals Malaysia, CIMB Bank and Shell Malaysia.

Congregation of Rajah Brooke *birdwing butterflies*

SEMAI secured funding to build chalets for ecotourism at Ulu Groh

Impacts of Empowerment

- The standard of living of SEMAI members has improved as a result of their own efforts. Income from tourist activities supplements the income of SEMAI members and villagers.
- In 2008, SEMAI, together with the network of indigenous groups of Perak, managed to win a battle against a private company encroaching into their site. The company was given a concession by the state government to log the area where the village and ecotourism site were located – for development into an oil palm estate. Due to the protests, a replacement site was given to the company, and Ulu Groh was saved.
- In 2010, the Perak Department of Forestry recognised some of the *Rafflesia* sites as high-conservation-value forests, and logging threats have stopped for the time being.
- The community has also benefited. For every visitor, SEMAI contributes RM 3 (USD 1) to the local community fund, which is used for road repairs, maintenance of trails, *gotong-royong*,[4] and village functions.
- The profile of Kampung Ulu Groh has been enhanced. The ecotourism package of SEMAI has become recognised at district and state levels. In 2009, SEMAI was presented with the Perak Tourism Appreciation Award (President's Award) in recognition of their involvement and participation in decision making related to ecotourism and sustainable use of natural resources in their village.
- The *sewang* dance has been well received, and SEMAI receives several invitations a year to perform at various functions. The dance troupe from Ulu Groh has also won several traditional dance competitions at state and national levels. ■

4 *Gotong-royong* means 'cooperation towards a shared goal'.

Project 3

PUBLIC OUTREACH AND CAPACITY-BUILDING PROGRAMME ON CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY OF TAMAN BOTANI KOTA DAMANSARA

Project Grantee: Residents' Association of Section 9 (RAS 9), Kota Damansara

Project Period: August 2004 to April 2007

Small tranquil wetland at the Kota Damansara Community Forest Park

BACKGROUND

The Residents' Association of Section 9 (RAS 9) worked with the Malaysian Nature Society (MNS) to establish an urban 'green lung' within the existing Sungai Buloh Forest area. The 'green lung' would protect the oldest gazetted forest in Malaysia – the Sungai Buloh Forest, also known as the Kota Damansara Community Forest. The project aimed to establish a community forest park towards conservation of the biodiversity of what is now called Taman Botani Kota Damansara.

Friends of Kota Damansara (FOKD), set up in 2003, is a coalition of seven residents' associations living in the vicinity of the Sungai Buloh Forest. FOKD was formed to counter efforts to de-gazette and develop the Sungai Buloh Forest. RAS 9 is a member of the informal coalition FOKD which started to realise that they themselves must take action to protect the urban community park.

PROJECT GOALS

The objectives of this project were to:

- enhance public and local community awareness on environmental concerns and, in particular, the on-going campaign to save Taman Botani (Forest Park), especially with regard to the conservation and sustainable management of its biodiversity;
- provide an opportunity for public and local participation and input at the grassroots level for appreciating, conserving and promoting the sustainable management of Taman Botani's biodiversity, services and functions as a 'green lung;' and
- instil the concept and understanding of local participation in sustainable development among its members and local communities along the lines of Local Agenda 21 in an overall and consolidated effort to motivate, educate and mobilise local communities in conservation and sustainable use of the park's biodiversity and natural resources.

IMPLEMENTATION

Resource Materials

Monthly nature-based appreciation activities on nature interpretation, guiding and walking along trails and identification of resident animal and plants at Taman Botani were introduced and carried out. A training manual on nature guiding and experiential learning was developed.

Printed materials, such as a general brochure and activity brochure, were developed. A guidebook for the marked trails in the forest park was developed for visitors. A video programme was produced to showcase the campaign and the justification to establish a Kota Damansara Community Forest Park.

Publicity & Linkage

Clean-up and *gotong-royong* activities at Taman Botani, and public events in conjunction with the National Day celebrations, were carried out.

A communication campaign was conducted via the media: press releases, appearance and interview (broadcast). A website was also established for this purpose.

Many local government representatives held dialogues and open discussions with RAS 9. New local interest groups were created via informal discussions in coffee shops and homes of members.

The development of the management plan for Taman Botani was carried out by MNS through field visits and discussions with relevant stakeholders.

Oldest forest reserve in Selangor which now serves as a community park

BENEFITS & ACHIEVEMENTS

This is the first time a community forest has been established for urban dwellers, and in which the residents act as stewards, and work towards the protection of the forest for the urban community.

An educated and informed community has been established on the importance of the biodiversity and sustainable use of the Community Forest Park in Kota Damansara.

The project provided a platform for RAS 9 to raise concerns relating to the legal status of the Sungai Buloh Forest Reserve.

The project has inspired smaller community groups to take citizen action towards creating an improved environment.

A grassroots movement has been initiated that would convene and mobilise people to come together to develop a common purpose, to protect the forest from further degradation and to develop an urban community park for all residents of Kota Damansara.

Signage at entrance of the park showing project collaborators

POST-IMPLEMENTATION & SUSTAINABILITY

Gazettement as Community Forest Park

From 2006 to 2008, there were discussions and preparation for a Phase 2 of the project to avail of another SGP grant, and to build on the achieved results of the first phase.

The turning point for the continuity of the project was the interest and support from the local state assembly member to help gazette the area as a community forest park under the Forestry Act of Selangor. This opportunity was pursued, and achieved in February 2010, when the gazettement was completed with the help of the Selangor state government through the auspices of the state executive councillor for Tourism, Consumer Affairs and the Environment.

The Selangor state government would remain committed to protect the park for future generations.

Funds from SGP for Phase 1 focused on capacity building, raising awareness and building rapport with stakeholders – it had no elements of sustainability. The funds from SGP for Phase 2 focused on work towards gazetting the area as a Forest Reserve.

Social Capital

The site is promoted as Kota Damansara Urban Park (KDUP), a platform for building communities to be aware of nature and its aesthetics and to bring people together for various events. The focus is on building social capital, the capacity of the community to implement activities towards the protection of the community forest. KDUP is used to forge cohesiveness among communities.

Policy Response

The continued interest and motivation by the community through engagement with local and state government triggered a policy response which was the legal gazettement of the surrounds of the community forest to that of a Forest Reserve.

Community Partnerships

Four types of community partnerships were developed through this project.

Community Within Kota Damansara: The formation of *Friends of Kota Damansara* was significant - it remains relevant in mobilising the residents to care for the forest, and to build a critical mass of community members to protect and care for the environment.

Community and Partnerships with Government Agencies: The community worked with the Petaling Jaya City Council (MBPJ) and the Department of Forestry on how to continue building the Kota Damansara Community Forest Park.

Covered area at the park to conduct group activities and assemble visitors

Paved walkway at the park

Community and Partnerships with NGOs: Most of the NGOs continue to extend expert advice on the status of flora and fauna in the park. The Malaysian Nature Society (MNS) and the Trails Association of Kuala Lumpur and Selangor (TRAKS) continue to open new trails within the park.

Community and Partnership with Corporations: Certain infrastructures, such as the creation of the gazebo and bridge, were made possible through corporate funding. In 2010, through corporate social responsibility efforts, the staff of Public Mutual (unit trust company), Public Bank and KPMG (professional services company) became involved in environmental education activities, to contribute funds for building rapport with private companies for win-win solutions, and also to forge relationships with other residents' associations even as far as Bukit Lancang.

Herbal Garden

The Petaling Jaya City Council (MBPJ) is creating a herbal garden (with ramps for the physically-challenged), and labelling plants near the lake area of Taman Botani. This is the commitment of the city council for residents of Kota Damansara.

Holistic Management

A management committee comprising residents' associations needs to be set up to look at conservation holistically, and to take note of lessons learnt, and to look into means of building national cohesion as a platform for national solidarity and unity, and to build caring citizens.

A management plan needs to be prepared to look into facilities and services for those who are physically challenged. ■

Project 4

INCREASING AWARENESS AND BUILDING CAPACITY OF URBAN MALAYSIANS ON SUSTAINABLE ENERGY OPTIONS

Project Grantee: Centre for Environment, Technology and Development, Malaysia (CETDEM)

Project Period: April 2003 to June 2006

Application of solar technology in the Demonstration and Documentation Centre for Sustainable Energy Solutions for Urban Households (DDC) Project

BACKGROUND

This project carried forward the CETDEM project on *Public Awareness on Energy Efficiency and Renewable Energy* in 1999. Focusing on urban Malaysians and climate change, the project attempted to provide working examples to promote sustainable energy usage among urban Malaysian households.

PROJECT GOALS

The goals of this project were to promote awareness among urban Malaysians of the potential for sustainable energy usage, and to act to reduce their ecological footprints from greenhouse gas emissions through renewable energy and energy efficiency. It was called the *ABC Project*, following the initial letters of 'awareness,' 'building,' and 'capacity' in the project title.

The *ABC Project* planned to:

1. expose and build the capacity of Malaysians from various sectors, especially urban households;
2. facilitate discussions on how best to increase public awareness and action in this critical area; and
3. develop a citizen's system for assessing progress in sustainable energy usage and conservation at the local community and other levels.

IMPLEMENTATION

Initially, five towns across Malaysia were targeted: Petaling Jaya (Selangor), Kuching (Sarawak), Kuantan (Pahang), Ipoh (Perak) and Kota Kinabalu (Sabah). A total of 100 households from each of these towns were targeted as respondents. Subsequently, in order to produce a sampling that is more representative, five more towns were added: Johor Bahru, Melaka, Georgetown (Penang), Miri (Sarawak) and Kudat (Sabah).

In undertaking the ABC Project, CETDEM encountered several challenges:

- Initial lack of interest from residents who attended the briefings;
- Subsequent decrease in support from community-based organisations (CBOs);
- Audit forms found to be difficult to complete by some CBOs;
- High turnover of project staff; and
- Underestimation of time to complete the project. Hence, the project deadline was extended twice.

The low response or lack of involvement was mainly due to the expectation of the residents' associations that they be paid for completing the surveys. However, such payments were not included in the project budget. Project funding was also not sufficient to conduct a nationwide study. As there was a limitation in sampling size, only preliminary findings could be presented.

The project also learnt that the effort to build capacity of NGOs and community groups to conduct energy audits is no easy task. Due to the lack of support from these groups, individuals were instead appointed to complete the energy audits with participating households.

Rainwater harvesting in the Demonstration and Documentation Centre for Sustainable Energy Solutions for Urban Households (DDC) Project

Features to reduce heating in the DDC Project

BENEFITS & ACHIEVEMENTS

Briefings were conducted in Petaling Jaya, Kuching, Kuantan and Kota Kinabalu. Energy audits were completed in participating households. Households that had completed energy audits on their homes became more aware of their energy consumption.

In addition, the project also produced the following outputs:

- Interactive CD to help conduct home energy audits;
- Booklet entitled *A Citizen's Manual 2003: The Sustainable Energy Path in Your Home* to

help urban households audit and reduce their energy consumption. This manual provided information and options on how to reduce and adopt better practices in energy consumption; and

- Publication of *Malaysian Urban Household Energy Consumption Patterns: 2004 & 2005,* which provided a glimpse on how energy is consumed by 238 households in nine towns/areas: Kuala Lumpur, Selangor, Johor, Melaka, Penang, Miri, Kuching, Kota Kinabalu and Kudat.

The *Malaysian Urban Household Energy Consumption Patterns: 2004 & 2005* was widely reported and quoted by the mass media and several institutions to promote sustainable energy usage.

POST-IMPLEMENTATION & SUSTAINABILITY

Promoting Energy Efficiency

The experience gained from the ABC Project allowed CETDEM to undertake projects of a similar nature. One of them was the *Working with the Community on Energy Efficiency at Household Level in Petaling Jaya* (EEPJ) *Project*, which was funded by ExxonMobil. The EEPJ Project enabled the continuation of efforts and transfer of experience to carry out a pilot project in Petaling Jaya city. The unused funds of about RM 20,000 (USD 6,667) from the ABC Project was channelled to co-fund the EEPJ Project, especially to provide incentives to participants.

Sustainable Energy Solutions

The outputs and experiences of the ABC Project were also useful for another CETDEM undertaking: the *Demonstration and Documentation Centre for Sustainable Energy Solutions for Urban Households* (DDC) *Project*. Funded by the Danish International Development Assistance (DANIDA), the DDC Project sought to enhance public awareness by sharing information and demonstrating sustainable energy solutions. The booklet *A Citizen's Manual 2003* was used in the DDC Project to develop its manual for household audits. ■

Project 5

PILOT PROJECT ON FORGING URBAN COMMUNITY LINKS FOR THE CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY

Project Grantee: TrEES (Treat Every Environment Special)

Project Period: February 2003 to May 2005

Recycling campaign at Giant Cash & Carry

BACKGROUND

TrEES had been running a community recycling centre in partnership with *Giant Cash and Carry* (GCC), a supermarket in Subang Jaya, Selangor, since 2001. This initiative had the support of the Selangor government and the Subang Jaya Municipal Council (MPSJ). Recyclable items that the public brought to the centre included paper, cardboard, tins, aluminium cans, plastics and clothes. The recyclable items were weighed, and shopping coupons were given based on their weight. Customers would use the coupons towards the purchase of goods from GCC. This was indeed a win-win situation for all parties concerned, and created an incentive for residents to bring recyclables to the centre.

TrEES developed an idea to expand the role of the recycling centre into a multifunctional centre, which would provide information on the environment, biodiversity and sustainable 'green-living' practices. Funds from the Small Grants Programme (SGP) were used to purchase equipment, including solar panels and a rainwater harvesting system; to establish a native garden showcasing biodiversity and simple techniques of composting and sustainable gardening; and to run training and outreach activities for the community.

The Biodiversity Community Centre (BCC) developed from its humble beginnings as a recycling centre into an interpretative one-stop centre serving urban dwellers with information on sustainable living with a low ecological footprint.

TrEES works with communities to

- raise their awareness on issues concerning the environment; and
- empower them to conserve and manage the environment responsibly.

PROJECT GOALS

The objectives of this project were to:

- raise public awareness on the importance of biodiversity, and the impact of current practices on biodiversity, natural resources and ecosystems;
- design and develop interactive modules highlighting everyday relationships between people and biodiversity that promote its regeneration, conservation and sustainable use; and

- promote individual and communal agency and advocacy aimed at laying the groundwork for establishing future policies.

IMPLEMENTATION

Although several activities were carried out during the project period, the more important activities are listed here. TrEES conducted surveys involving the public and visitors to the BCC to get feedback on their understanding of biodiversity. Based on the survey findings, educational materials were developed for distribution.

TrEES also installed small pilot models at BCC on solar power, rainwater harvesting, composting and growing a native garden of indigenous plant species.

Schools were assisted in implementing hands-on activities at the school's premises, including creation of a garden, wildlife research and outreach on biodiversity.

TrEES promoted the BCC and organised visits to BCC for local authorities, government agencies, schools, residents' associations and overseas visitors.

Workshop at Taman Negeri Selangor

MPSJ gave a licence to TrEES in 2001 to have a recycling centre initially supported by the Selangor government.

Simple techniques and methods were undertaken to promote sustainable urban living. Solar energy was used to power electrical equipment; rainwater harvesting was implemented for water used in the garden; composting techniques were carried out; and a native garden composed of indigenous plants was set up. The wall panels and some of the fittings in the building were made from discarded materials.

BENEFITS & ACHIEVEMENTS

Sustainable Urban Living

The BCC was developed from a recycling centre into an environmental awareness and interpretative centre including biodiversity and sustainable living elements catering for urbanites to pursue sustainable urban living. The BCC was the first of its kind in Malaysia.

Information Centre

Urban households lacked information on sustainable urban living methods. The BCC was a public referral place for such information and awareness raising, and these were prominent activities of the BCC.

The BCC served as an avenue for school and community excursions, and for conducting hands-on activities for participants.

Recycling & Shopping

The recycling component of BCC acted as a visitor's attraction to the educational dimension of the centre as well as to help defray part of the operational cost of running the BCC, which was located on a rented parking lot at GCC. When a customer brought items for recycling, such as used steel, aluminium cans, plastics, or paper/cardboard, the customer was paid in cash coupons according to the weight of recycled materials. These coupons could be used to pay for goods bought at GCC. Through this mechanism, GCC received a business benefit while TrEES sold the recyclable items for cash that was used to fund the activities of the BCC.

Tourism & Outreach

The BCC served as a showcase for foreign visitors and guests of local town councils, such as Kuala Lumpur City Hall, which brought them in. There were also study and exchange visits from visiting foreign university students. Visitors learned about sustainable urban living, environmental issues and biodiversity conservation.

From 2001 to 2008, the BCC was open from Tuesday to Sunday, and was averaging 1,000 visitors a month. Hence, about 84,000 people directly experienced a great outreach programme.

Participating in TrEES signature campaign to protect Klang Gates Quartz Ridge

Raising community awareness at Giant Cash & Carry, Subang Jaya

POST-IMPLEMENTATION & SUSTAINABILITY

Environment & Climate Change

Wanting to build on earlier successes and infrastructure that was done in Phase 1, TrEES applied for funding from SGP for Phase 2 that was operational from 2006 to 2008. The second phase expanded its scope to include climate change and the environment, and the Malaysian scenario in adapting to climate change. Funding in Phase 2 was also to continue activities initiated in Phase 1 of the SGP project.

The recycling activities continued, thereby helping to sustain the operational cost of running the BCC.

Concept Replication

This urban recycling concept has set an example or model for the relevant authorities to incorporate the '3Rs' approach in urban environment into their policies and programmes. Many other hypermarkets, such as TESCO, replicated the effort by creating their own recycling centres equipped with 'green-living' concepts embedded within the centres.

This idea has been replicated in a few states and federal territories in Malaysia, such as Selangor, Kuala Lumpur, Putrajaya, Johor and Penang, where similar centres were set up.

The nationwide adoption or replication of this concept and the attendant benefits from this project are important. There was both public and government buy-in for a Biodiversity Community Centre as a result of the SGP intervention.

End of BCC

The structure that housed the BCC was torn down over a dispute between GCC and the owners of the land. An unexpected dispute over the land and issue of rental rates among the owners became a serious matter which affected GCC's tenancy status. The MPSJ could not assist in the matter, as GCC was not the legal owner of the land. Due to the legal dispute, TrEES had to cease operations, and the building was demolished thereafter. The building was torn down in January 2009, and within three days, there was no physical evidence that the BCC ever existed.

Multiplying Sustainability

The experience and knowledge gained by TrEES in establishing and operating the BCC for several years has been used to help run their other community environment programmes. The multiplier effect from the project could be seen through the emulation of the tenets of sustainable 'green living' promoted at the BCC by visitors, local authorities, participating schools and private companies in their everyday lives and business operations. ■

Project 6

CONSERVATION AND SUSTAINABLE USE OF THE BIODIVERSITY AT SEDILI KECHIL RIVER BASIN

Project Grantee: Wetlands International (WI) Malaysia

Project Period: November 2006 to November 2009

Rehabilitated aquaculture pond

BACKGROUND

Sedili Kechil is a traditional Malay fishing village located at the river mouth of Sedili Kechil River on the east coast of Johor. The local economy is derived from fishing in inshore waters, operating small sundry shops and working in oil palm plantations nearby. Traditional fishing practices are carried out for harvesting of horseshoe crabs, clams, and salted fish production.

The Sedili wetlands represent a rare and unique wetland that was in danger of disappearing. From the sandy and rocky coastline, the landscape changes to a saltwater mangrove forest at the inter-tidal zone, nipah palm in brackish water swamps, *pandanus* vegetation in the riverine forest to freshwater swamp forest upstream. The villagers were unaware about the rich biodiversity and importance of the Sedili wetlands where their livelihoods have depended on the harvest of natural resources for many generations. The Johor state government was interested in nominating the Sedili Kechil River Basin as wetlands of international importance to be included in the Ramsar Convention.[5]

PROJECT GOALS

The objectives of this project were to:

- develop and build the capacity of local communities to participate and be involved in the conservation of Sedili Kechil River; and
- build the capacity of the local communities on ecotourism-related skills for them to develop alternative income-generating sustainable enterprises based on ecotourism for the local communities of Sedili Kechil River in line with the conservation and wise use of the biodiversity and natural resources.

[5] The Ramsar Convention (Convention on Wetlands of International Importance) is an international treaty for the conservation and sustainable utilisation of wetlands. It is named after the town of Ramsar in Iran.

IMPLEMENTATION

Resource Materials & Capacity-Building Programmes

Wetlands International (WI) Malaysia was able to develop educational and outreach materials on the conservation and sustainable use of the Sedili Kechil River basin.

Talks were conducted for villagers and schoolchildren to raise their awareness of the wetland ecosystems in relation to sustainable use of natural resources.

Workshops were held to build capacity of the local community on sustainable use of wetland resources, and hands-on activities in ecotourism were also conducted.

Mangrove Conservation

A nursery for mangrove seedlings was set up, and replanting of mangroves along degraded areas and abandoned aquaculture ponds was also carried out.

A well-received environmental awareness programme, which included colouring competitions, was organised for 200 students.

Surveys & Data Collection

A comprehensive survey on fish conducted with assistance from National Zoo experts revealed that several species, including *Betta tomi* and *Encheloclarias sp.,* were on the Red List of IUCN.

A survey was conducted by the Forest Research Institute of Malaysia (FRIM) to update the data and status of plant biodiversity at the site, and a total of 242 plant species were recorded.

Mangrove boardwalk

Ecotourism Potential

Ecotourism skills training sessions, including handicraft making, and nature guiding and interpretation, were conducted, and certification of eco-guides was implemented.

Ecotourism promotional materials, such as website, training manual, brochures and video, were also developed.

BENEFITS & ACHIEVEMENTS

Capacity Improvements

Need for Environmental Conservation

The most important contribution of this project was that the local community understood the importance of their environs, the uniqueness of the Sedili wetlands and the need for conservation.

The knowledge on Sedili wetlands (freshwater merging to brackish water, and finally mangroves and beach ecosystems) imparted to the local villagers was improved with talks and awareness-raising sessions either in a classroom atmosphere or at the mangrove boardwalk, river cruising or learning by doing exercises.

Improved Capacity

The capacity of the Sedili Ecotourism Committee in meeting its objectives has improved with the skills and local knowledge enrichment programmes conducted with funding from SGP.

Biodiversity Update

The field surveys yielded information and an up-to-date record of plants and animal species in the vicinity of the project site of Sedili wetlands, notably a few significant fish and aquatic plants.

Ecotourism Training

A group of 12 individuals who had an interest in taking part in community-based ecotourism obtained training from the staff of WI as well as from the accredited government nature-guiding programme.

Mangrove nursery

Abandoned pond before project started

POST-IMPLEMENTATION & SUSTAINABILITY

Infrastructure & Training

More ecotourism-related infrastructure, such as jetty, has been built. The Southeast Johor Development Authority (KEJORA)[6] provides training especially to youth, and has the funds to further develop infrastructure and facilities.

6 KEJORA is the local arm of the Ministry of Rural Development to improve the livelihoods of rural community with regard to infrastructure development and amenities, and to enhance soft skills on entrepreneurial training.

Environmental Watch

After the project was completed in November 2009, WI visited the site four times in 2010 to motivate the local guides and youth. The community members are interested in conserving their environs, and have reported related problems, such as upstream pollution and further destruction of riverine zones, to the district authorities.

Periodic collective cleaning of the Sedili environs is supervised by Mahadan Mansor, chairperson of the Sedili Kechil Tourism Committee (SKTC).

Ecotourism Initiatives

The ecotourism potential of the Sedili wetlands has been realised by identifying places of interest along rivers and nearby villages, and the history of the villages has been explored and documented. An interesting tour package has been developed in the river cruise activity, and traditional fishing practices by inshore fishermen are also highlighted.

Mahadan, a highly motivated entrepreneur who has helped people through community development initiatives, is a key person to continue marketing ecotourism services and products of the Sedili wetlands. He is interested to get WI's help to raise funds from SGP for the promotion and marketing of eco-products and services in the near future.

Mahadan and Razali, a licensed nature guide, periodically ask WI for advice on ecotourism activities. With Mahadan's help, nature guides get periodic bookings from college students and outstation visitors for boat trips and camping.

The SKTC needs some assistance from WI to equip a centre with publicity materials to operate tours.

Chalet at Mutiara Resort, Sedili Kechil

Recently renovated and nearing completion, the centre will also disseminate tour information.

The marketing of Sedili wetlands as a local attraction potential for visitors needs to be fully explored.

Government Intervention

WI taught soft skills (knowledge on wetlands and conservation issues, and tourism-related skills), while KEJORA invested in infrastructure. KEJORA has taken this project as an entry point to assist community members to set up small businesses and to provide training associated with entrepreneurship. This is an example of 'scaling-up' of a small community-based initiative, in which the local government entity, like KEJORA, provides additional resources to further develop and organise the community in order to make a bigger impact.

Ecotourism Cooperative

The community wants to create and register a cooperative for an ecotourism business through the District Cooperative for Tourism and Town Infrastructure. Such a cooperative would have to be registered with the Commissioner of Cooperative Business. The 'driver' championing the cause is Mahadan, who is in contact with KEJORA, the district office and village community leaders. ■

Project 7

RETURNING A MALAYSIAN NATURAL HERITAGE OF GIANT CLAMS TO JOHOR ISLANDS

Project Grantee: School of Biological Sciences, Universiti Sains Malaysia (USM)

Project Period: February 2003 to December 2006

Giant clams re-stocked at one of the giant clam gardens in Johor islands

BACKGROUND

The population of giant clams in Malaysia is declining due to pollution, environmental degradation, and harvesting for its meat and shell. Villagers in some islands were willing to skin-dive and harvest these clams for as little as RM 20 (USD 7) per clam.

The State of Johor realised that giant clams were its natural heritage, and launched a project in 1997 to save the giant clams, in collaboration with the School of Biological Sciences (SBS) at Universiti Sains Malaysia (USM). Pulau Besar, Pulau Tinggi, Pulau Pemanggil, Pulau Aur and Pulau Rawa were included in this programme. The growth and survival of these young clams were monitored since 1999.

Increasing the Population of Clams Reseeding

In this process, giant clams were induced to spawn in their natural environment. Their offspring were then nurtured in hatcheries until they reached a shell size of about 7 – 8 cm before these young clams were re-stocked in their natural environment.

PROJECT GOALS

This project, which was developed as a component of a larger project, addressed two main issues:

- Involving local communities in the reintroduction of giant clams to its environment; and
- Educating and sensitising the local island communities, as well as the general public, on the importance of conservation and sustainable use of marine resources.

IMPLEMENTATION

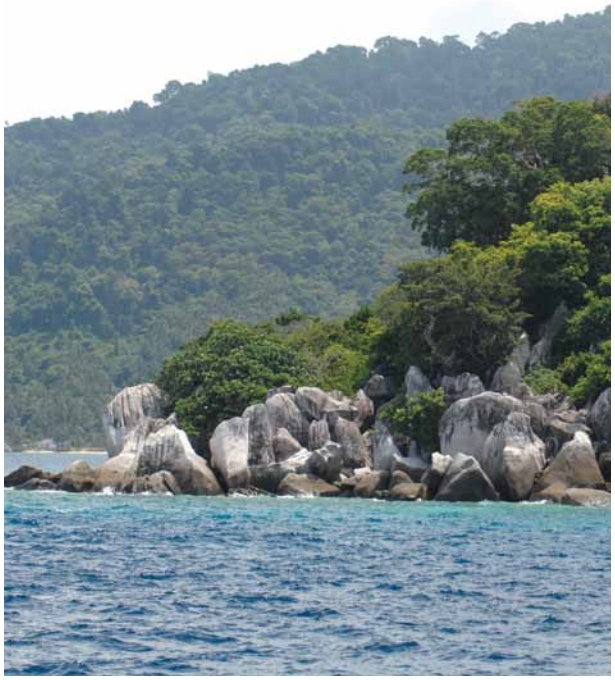
Hands-on Training

A workshop was conducted for local communities on the conservation and sustainable use of giant clams. Held at the Marine Research Station at USM, where hatchery facilities were located, it provided the opportunity for members of the community to learn how giant clams were cultivated in tanks. Similar workshops with hands-on training exercises were also conducted in the islands.

Clam Re-Stocking

This project also carried out the re-stocking of juvenile clams in the coral reefs of the Johor islands. Members of the island communities were trained and were involved in the re-stocking project. Volunteer participants were recruited and taught basic underwater observation skills, such as monitoring the growth and survival of the clam population, as well as how to survey distribution of the natural population of clams.

Dead giant clam shells found on degraded reefs



Pulau Aur, one of the islands in Johor where the clams were re-stocked

'Adopt a Clam' Programme

Family-run clam grow-out sites were set up in five villages. Based on the concept of 'adopt a clam', a programme was developed for participating local communities to take care of juvenile clams near their villages. In this programme, 20 mature giant clams (about 10 cm) were given to each group. Each group was trained to care for and monitor these clams. Their main role was to ensure that these clams were not overturned by strong underwater currents, and were occasionally cleaned of algal fouling during the spring low tide.

In return, these 'clam gardens' were potential tourist attractions, and offered an opportunity to raise public awareness. The project suggested that RM 5 (USD 1.67) be collected as a fee from tourists who wanted to visit the sites. The 'adopt a clam' programme provided opportunities for locals to take an active role in conservation.

Monitoring & Management

The project also tried to establish a long-term monitoring programme, in which local communities were trained as eco-rangers to monitor conservation and pollution issues, as well as the sustainable use of natural resources in the islands. In the monitoring process, they would collect water samples monthly, and run simple analyses using direct measurement techniques and tools for temperature, salinity and total suspended solids. The project also tried to introduce a village-based management committee consisting of six representatives – one from each village – to manage coral reefs and giant clams.

Educational Publications

During the project period, two booklets were published. *Giant Clams of Malaysia* is an information booklet for the general public. The other booklet, intended for primary school children in the islands and in mainland Johor, is available in English (*Giant Clams*) and the national language (*Kerang Gergasi*).

International Forum

The experience of this project was shared at the Natural Geography in Shore Areas (NaGISA) World Conference 2006 in Kobe, Japan.

BENEFITS & ACHIEVEMENTS

By participating in the activities of this project, local communities were able to appreciate the uniqueness of giant clams, and were able to understand the need and importance of protecting them. They were also able to participate in the conservation of their natural resources and explain about marine resources to visitors.

POST-IMPLEMENTATION & SUSTAINABILITY

Relocation of Project Participants

Although the project correctly identified the importance of involving local communities, it faced many challenges. Most of the project participants no longer live in the islands. To write this report, it was possible to talk to only one representative who had moved to Mersing in 2006, the year the project ended. This participant said that he was not aware of any families who were taking care of the 'clam gardens' after the completion of the project.

Non-Conducive Environment

Feedback and inputs were also obtained from Zulfigar Yasin, professor of marine biology at SBS, who was monitoring the health and growth of giant clams in the project area from 2007 to May 2011. Based on his analysis, the sustainability of this community-based project was challenged by the natural conditions and demographical changes that took place in the islands over the years. Villagers were subjected to harsh environmental conditions; and for at least four months in the year, the islands experienced a monsoon season, in which food was scarce, and giant clams were good targets to be harvested for food.

Socioeconomic Opportunities

Many villagers, including project participants, had moved to mainland towns, such as Mersing, to seek better economic opportunities. Hence, the 'clam gardens' were unguarded. Many of them decided to remain on the mainland due to employment opportunities and better access to quality education for their children. ■

Project 8

PHASE 2: ENHANCING THE SKILLS AND CAPACITY OF SABOT TO PROMOTE, IMPLEMENT AND MANAGE THEIR OWN ECOTOURISM ENTERPRISES

Project Grantee: Semelai Association for Boating and Tourism (SABOT)

Project Period: April 2003 to February 2006

Phase 1: Developing Community-Based Ecotourism for the Indigenous Semelai Community in a Wetland Area of International Importance: Tasek Bera, Pahang

Project Grantee: Semelai Association for Boating and Tourism (SABOT) through Wetlands International (WI) Malaysia

Project Period: January 2001 to September 2002

SABOT office in Pos Iskandar where meetings are held

BACKGROUND

The *Semelai* are forest gatherers and hunters, but also harvest fish and other aquatic organisms from the open lakes, streams, marshes and wetland areas. Their culture and traditions are entwined with Tasek Bera, the largest freshwater system in Peninsular Malaysia. Phase 1 built upon the efforts of WI Malaysia to implement an earlier three-year project funded by the Danish Cooperation for Environment and Development (DANCED) for building capacity of both government and the *Semelai* community in managing resources at the site in a co-participatory manner.

Phase 1 was undertaken to organise the guides and boat operators, and to provide training to them while emphasising the motivation to safeguard Tasek Bera as a natural heritage. Subsequently, Phase 2 was undertaken to enhance awareness of conservation needs and environmental issues among the *Semelai* community, and to market Tasek Bera as a tourist destination.

PROJECT GOALS

The objectives of this project were to:

- strengthen the institutional capacity of SABOT;
- strengthen the capacity of guides in forest ecotourism;
- develop specialisation skills among the local community in forest camp landscapes and management, and handicraft making;
- strengthen the development of innovative eco-tour packages;
- document and profile forest harvests for handicraft making;
- implement a marketing strategy for forest-related ecotourism products and services; and
- develop women entrepreneurs through handicraft making.

IMPLEMENTATION

Marketing opportunities were expanded and extended for *Semelai* ecotourism handicrafts, goods and services to tour companies and handicraft outlets.

Adequate training and capacity building of SABOT's eco-guides was provided, especially to enable SABOT's eco-guides to confidently and readily communicate in English, by conducting more intensive, systematic and regular English classes. WI initiated many of the training activities.

Improved packages on nature-based activities in Tasek Bera for schools, youth groups, organisational groups and tourists were promoted, enhanced and provided. The pool of trained and licensed SABOT ecotourism guides recognised by the Ministry of Culture, Arts and Tourism was increased.

The knowledge base on environmental awareness among locals in Tasek Bera in collaboration with SRK (national primary school) Pos Iskandar was improved. *Semelai* culture and traditions were promoted, documented and maintained.

The role of women in the local community was enhanced by promoting leadership and facilitating their capacity for alternative income generation.

BENEFITS & ACHIEVEMENTS

This SGP project has further enhanced the all-round capability of SABOT by training more than just the few core members in financial management, guiding and empowering them to be able to make SABOT sustainable even after the GEF-SGP involvement is over. New skills developed in nature interpretation and marketing of SABOT services have enabled the nature guides to become better managers and operators on all aspects of an ecotourism business.

Signage to SABOT office at Pos Iskandar, Tasek Bera

Some of the project activities and achievements have been successfully showcased in a video entitled *Community-Based Ecotourism by the Indigenous People of Tasek Bera Ramsar Site, Malaysia*.

POST-IMPLEMENTATION & SUSTAINABILITY

Continued Support

Opportunities were explored to ensure the sustainability of SABOT and the *Semelai* indigenous people's community-based ecotourism at the Tasek Bera Ramsar Site. When Phase 2 (funded by GEF-SGP) of the project drew to a close, WI and SABOT jointly developed a 'fund-bridging project,' and successfully secured the required funds from the (then soon-to-be-launched) EC-UNDP SGP PTF.[7] The SGP PTF project provided an

[7] Through a partnership between the European Commission (EC) and the United Nations Development Programme (UNDP), a regional initiative known as the Small Grants Programme for Operations to Promote Tropical Forests (SGP PTF) was set up to focus specifically on helping indigenous people.

opportunity for the beneficiaries to be recognised and highlighted in the print media, and through this publicity, new funding opportunities were made possible.

Capacity Building

The SGP PTF-funded project (after Phase 2) for SABOT began in 2006, and this period focused more on capacity building for women, and sale of handicrafts in the urban areas. The older women taught younger women to make handicraft in the traditional manner so that the traditional knowledge is not eroded.

SABOT was trained to be more independent in conducting their annual general meetings and keeping adequate financial and organisational records. More women have joined SABOT since Ms. Yureday took over as chairperson of SABOT. This was a good sign.

Improved Infrastructure

Since the SGP project ended, the telecommunication services and infrastructure has become well developed in Tasek Bera. CELCOM (Malaysian mobile telecommunications company) and DiGi (mobile telecommunications service provider in Malaysia) have set up their communication towers there. There is availability of clean portable water and 24-hour supply of electricity.

Some infrastructure development for camp sites, cooking areas and toilets were carried out by the SABOT members with technical guidance from a nature consultant.

SABOT Membership & Office

With funds and support from SGP (Phase 2) and technical assistance from WI, SABOT members met more regularly. However, this has decreased over the years, and presently (2010), there is not much commitment among SABOT members to work together.

The SABOT office at Pos Iskandar that was refurbished and equipped under the previous two SGP projects has not been used since 2008. A tree fell and damaged the office roof, and signs of leakage are visible.

Competitive Ecotourism

There is competition in ecotourism initiatives since the management authority (with government staff based in and around the site) of Tasek Bera also regularly conducts nature guiding and interpretation activities, with camping facilities for students.

There are fewer inquiries from potential visitors, and bookings are channelled through WI and directed to Yureday, Stem and Hashim (SABOT members and eco-guides) to coordinate the tour packages.

Decrease in Popularity

The popularity of Tasek Bera wetlands as an ecotourism destination has decreased due to several reasons.

Shift to Rubber: The villagers own small plots of land where rubber is cultivated. In recent years, the price of latex has substantially increased, and the

Semelai community has an increasing dependency on tapping rubber as a sole source of income, and a lesser dependency on income derived from ecotourism activities, which is not a sustainable livelihood for them.

Lack of Promotion: SABOT would not be able to run the ecotourism business independently without the aggressive marketing and assistance of the Pahang Tourism Board (PTB). In recent years, PTB has not been promoting Tasek Bera as an attractive tourist destination.

Water Levels: Connectivity and accessibility to the wetlands also poses a problem as boating activities depend on adequate water levels in the lake and water channels in Tasek Bera. The El Nino[8] and climate change impacts are visible in Tasek Bera with low water levels in the wetlands for many months in a year. ■

SABOT office in need of repair after tree fell on rooftop

8 El Niño (Spanish for 'little boy') is an oscillating phenomenon of unusually warm ocean temperatures which disrupts the ocean-atmosphere system in the tropical Pacific Ocean roughly every five years. El Niño has important consequences for weather and climate around the globe.

Project 9

TURTLE BIODIVERSITY CONSERVATION THROUGH ACTIVE PARTICIPATION OF THE MA' DAERAH COMMUNITY

Project Grantee: MEKAR (Persatuan Khazanah Rakyat Ma' Daerah/ Ma' Daerah Community Conservation Association)

Project Period: July 2006 to August 2009

Exhibition at roadshow in June 2008 at Kemasek

BACKGROUND

Turtles are probably, and unofficially, the icon of the State of Terengganu. The Ma' Daerah beach, which is located within the town of Kerteh, Terengganu, has a stretch of beach which is declared as a "turtle sanctuary" because it was identified as a critical turtle nesting habitat. On the average, 250 to 450 turtle nests are found on this beach annually. Registered in year 2005, MEKAR is the only local community-based organisation that is focused on turtle conservation in Ma' Daerah, Terengganu, and probably the only such organisation in Malaysia.

PROJECT GOALS

- To equip MEKAR with the necessary skills to be able to work collaboratively to undertake turtle conservation efforts with members of the larger community and other relevant stakeholders;
- To create awareness on the biodiversity of Ma' Daerah and its importance in relation to marine turtle conservation; and
- To increase awareness of the local community on marine turtles, and the pertinent issues related to conserving marine turtles in Ma' Daerah.

The stakeholders of the project were the Terengganu government, Terengganu Department of Fisheries, Turtle and Marine Ecosystem Centre, fishermen's associations, WWF-Malaysia, local village heads, and residents of the towns of Kerteh, Paka and Kemasek.

IMPLEMENTATION

Turtle Conservation Awareness

MEKAR put up exhibitions, organised road shows, delivered talks as well as carried out workshops to promote awareness on turtle conservation. Activities targeted at school children include colouring and essay competitions, poster exhibitions, fancy-dress competitions for kindergarten students, and turtle-themed traditional dances.

A programme called *Bermalam di Ma' Daerah* (Stay a Night in Ma' Daerah) was held during the turtle nesting period. It was a hit among the local community and the tourists who were keen to learn about turtles, and to observe how they nest. Participants also got the chance to do beach clean-ups and help release turtle hatchlings. The programme was a wonderful opportunity for MEKAR to raise awareness on conservation of turtles.

Traditional dance at roadshow in June 2008 at Kemasek

Stakeholder Workshops

Workshops organised by MEKAR targeted various stakeholders, such as fishermen, religious officials and teachers. Fishermen in two key fishing sites in Paka and Kerteh were taught techniques to rescue, resuscitate and release turtles back into the sea.

Innovative Outcomes from Workshops

- MEKAR organised a turtle conservation workshop for religious officials, and it was attended by *imams*[9] and mosque officials. The enthusiasm at the workshop resulted in a draft of a sermon (*khutbah*)[10] to be delivered during Friday prayers. With the blessing and approval of the Terengganu State Religious Department, the sermon (which was delivered on 27 November 2008 in over 400 mosques in Terengganu) provided a religious perspective on environmental issues in general, with specific mention on turtle conservation. The Friday sermon was considered innovative as it was the first time in Malaysia that turtle conservation was presented within a religious context in mosques. Through this approach, the turtle conservation message was disseminated to a wide audience.
- MEKAR carried out several workshops with school teachers in the towns of Kerteh, Paka and Kemasek to prepare a teacher's guide to incorporate turtle-related topics into the teaching of the national language (Malay) for students in Year 4, 5 and 6. As a result, turtles were 'infused' into the daily lesson plans of teachers. The lesson plan was piloted in 30 schools in Malaysia.

9 An *imam* is a worship leader of a mosque.

10 *Khutbah* serves as the primary formal occasion for public preaching in the Islamic tradition. It usually means the address delivered in the mosque during the weekly (Friday) worship.

BENEFITS & ACHIEVEMENTS

Changing Public Perception

There is an increased level of understanding among MEKAR members and the public, such as knowledge of the names (common and scientific) of various types of marine turtles that are found in the state, and the life cycle of turtles and their habitat in general. The general awareness is slowly changing public perception and shaping opinions on the collection, sale and consumption of turtle eggs, thus complementing efforts by NGOs, such as WWF-Malaysia, in their turtle egg buy-back programmes.

Visibility of MEKAR

With funding from SGP, the capacity and visibility of MEKAR has improved. Capacity improvements were in the development of relevant content and materials for promoting awareness on the protection of turtles; platforms and networks for engaging relevant stakeholders; as well as the capacity of its members gained from the experiences of organising and participating in road shows, events, and competitions.

With better visibility, MEKAR has been invited to give talks on turtle conservation to the Terengganu state government, other districts in Terengganu, the corporate sector, and even abroad. MEKAR was also invited as a judge in a national-level university debate organised by the Department of the Environment.

Public Speaking Workshop 2009

Colouring competition is one of the many activities that MEKAR included in their roadshows

POST-IMPLEMENTATION & SUSTAINABILITY

Viability of MEKAR

MEKAR has succeeded in carving a niche for itself as a CBO involved in promoting awareness on turtle conservation. The success of MEKAR can be seen from some of the outcomes, such as increase in membership, visibility and ability to raise funds. Yet MEKAR is aware of its limitations as a volunteer-based organisation that does not have a full-time staff apart from the officer engaged during this project.

Roadshow (Kerteh 5) in February 2010

Positive Steps Towards Turtle Conservation

- MEKAR has about 460 members and growing.
- MEKAR's role in turtle conservation has been recognised by the Terengganu state government. MEKAR is now a member of the state's Turtle Sanctuary Committee.
- MEKAR raised RM 23,000 (USD 7,667) from a fundraising dinner.
- Sponsorship and support from local foundations and companies have increased for awareness and community-based activities, such as *gotong-royong*, and participation in awareness programmes (*Bermalam di Ma' Daerah*) in the Ma' Daerah Turtle Sanctuary.

Materials for raising awareness developed during the project period

Furthering MEKAR's Reach

MEKAR has received funding from SGP for a second project. Most of the activities planned involve furthering the reach of MEKAR's activities, and improving and strengthening the outcomes and impacts of the first phase. ■

Coins contest at roadshow (Kerteh 5) in February 2010

Project 10

COMMUNITY-BASED CONSERVATION OF BIODIVERSITY IN SUNGAI NENGGIRI, KELANTAN

Project Grantee: Sahabat Sungai Nenggiri (Friends of Nenggiri River)

Project Period: December 2006 to December 2009.

SSN's mission is that Sungai Nenggiri should be teeming with kelah *(Malaysian mahseer): an indication of a clean river*

BACKGROUND

Sungai Nenggiri, located in the District of Gua Musang, Kelantan, is one of the major tributaries of Sungai Kelantan. The environmental problems of Sungai Nenggiri include water quality degradation due to high sedimentation from extensive logging activities, land clearing for agriculture, and illegal methods of fishing, i.e., poisoning, bombing and electrifying. Sungai Nenggiri is also home to the *kelah* (*Tor tombroides* or Malaysian mahseer), which is listed as "endangered" under Malaysian law. The poverty level among the local communities is relatively high, and they are heavily dependent on forest produce for their livelihood. This project provided support to Sahabat Sungai Nenggiri (SSN).

PROJECT GOALS

This project was aimed at addressing the issues and threats to riverine biodiversity by promoting and enhancing awareness; by understanding the importance of sustainable management of rivers for conservation of fish; and by supporting the livelihoods of rural communities.

Its objectives were to:

- strengthen SSN Gua Musang as a mechanism for community participation to conserve natural resources in Sungai Nenggiri; and
- promote ecotourism as an alternative source of livelihood.

Project activities were focused on capacity-building activities for the three local communities at Pos Pulat, Pos Pohoi and Kampung Setar. These communities were considered guardians of the proposed Kelah Conservation Area (KCA), which was previously proposed in 2005.

IMPLEMENTATION

Strengthening community participation in the conservation of natural resources came under five categories of activities.

River Surveillance

Monitoring and surveillance along Sungai Nenggiri was undertaken monthly from the three villages. Quarterly surveillance was carried out by boat by a team of five rangers along 35 km of the river where the KCA was situated.

SSN's Collaboration with Other Agencies

Meetings are held occasionally with local fishermen and the Kelantan Department of Fisheries (KDOF). SSN also recruited river rangers and maintained signposts of river sections. Illegal fishing activities were reported to KDOF. SSN also regularly monitored the expansion of a nearby oil palm plantation into community land areas by doing regular checks on the Ladang Rakyat near Pos Pulat to prevent encroachment into community water catchment areas. Such encroachments were reported to the Jabatan Kemajuan Orang Asli (Department of Orang Asli Development) that manages indigenous people's affairs and deals with the developer.

Conservation Management Capacity Building

A study trip was made to the Kelah Conservation Centre at Taman Negara Sungai Relau, Merapoh, Pahang, where four SSN committee members learnt about conservation efforts for *kelah* breeding.

SSN members in front of a ranger's hut under construction

In addition, SSN members attended relevant training workshops organised by KDOF on data collection of inland fisheries. With KDOF, SSN also managed to facilitate biodiversity research at Sungai Nenggiri with the two boats that were offered for data collection and monitoring.

Community Involvement

A cultural centre, consisting of a community centre, handicraft stall and *Dewan Sewang* (dance hall), was established at Pos Tohoi through the *gotong-royong* concept. Other *gotong-royong*-based activities include cleaning and upgrading the existing camp site at Pos Pulat and Pos Tohoi. SSN Pos Pulat was provided with project funds to develop and upgrade an existing jungle trail to Lata Pelangi.

Awareness Promotion

SSN also carried out community-based activities, such as colouring contests for the *Orang Asli* children at Pos Pulat and Pos Tohoi. Planting of 1,000 seedlings of forest trees along the slopes of degraded

river buffers near Pos Pohol Village were aimed at creating awareness of the local communities on the continuous need for the protection of the river corridor. Talks were given about *kelah* conservation at Kampung Setar, and a community-awareness programme was carried out around the mosque.

Rafting along Sungai Nenggiri

Promoting Ecotourism As Alternative Livelihood

After successfully completing a two-week training programme, 15 SSN members qualified as licensed nature guides who could undertake, plan and conduct ecotourism at the Sungai Nenggiri basin.

Ranger's hut for use during river surveillance

Proactively Exploring New Ecotourism Collaboration and Products

- SSN initiated working relationships with KESEDAR[11] Travel & Tours, and other local nature guides based in Gua Musang. SSN also joined various promotion activities; for instance, the *Visit Kelantan 2008* tourism convoy organised by the Kelantan Tourism Information Centre to Perak, Kedah, Perlis, Negeri Sembilan, Melaka and Johor.
- Gua Pintu was explored as a new ecotourism destination for Kampung Setar. Gua Pintu, known among locals as a burial ground for wild elephants, has a communist camp site, and has a commanding view of Sungai Nenggiri.

- SSN partnered with local universities – Universiti Teknologi Malaysia (UTM) and Universiti Teknologi Mara (UiTM) – and with PERHILITAN[12] and Taman Negara (National Park) to develop community-based ecotourism in the northern region, especially at Gua Musang. The effort included an ecotourism potential study of the Sungai Nenggiri basin in collaboration with UTM. Students from Universiti Malaysia Terengganu (UMT) also carried out surveys to profile the Sungai Nenggiri fishermen community and the fisheries biodiversity in that area.

11 KESEDAR is an acronym for South Kelantan Development Board.

12 PERHILITAN is an acronym for the Department of Wildlife and National Parks Peninsular Malaysia.

BENEFITS & ACHIEVEMENTS

Higher SSN Capacity

Capacity-building activities carried out by SSN contributed towards empowerment and an increase of confidence among its members as well as in the local community. Knowledge, skills and experience were enhanced in ecotourism, monitoring and surveillance along Sungai Nenggiri, and conservation and resource management. In particular, SSN members are capable of organising meetings and events, and thereby have raised awareness of the importance of *kelah*. This has raised the level of awareness for the conservation of Sungai Nenggiri, and also increased the visibility of SSN among various institutional stakeholders.

Improved Livelihoods

The project has improved livelihoods by involving local communities in ecotourism activities, and also promoting local arts and crafts. Previously, tour companies employed 'external' tour guides; presently, they employ local guides who are trained through capacity-building projects by SSN. Discussions with local guides regrettably revealed that tour operators were not paying them the market rate for their services. This disparity has spurred them, since 2007, to organise their own tour packages: mainly rafting and fishing packages, with visits to an *Orang Asli* village.

SSN office at Pos Pulat, Gua Musang

Increased Visibility for SSN and Sungai Nenggiri

- A workshop on *Inland Fisheries Conservation and Management* was held at Pos Pulat in May 2007. This was co-organised by the federal-level Department of Fisheries (DOF) and SSN. Seventy-five participants from the communities living along Sungai Nenggiri attended this workshop, which saw the zoning of the Kelah Conservation Area into core use (red area), restricted use (yellow area) and buffer use (green area). The SSN River Rangers initiative with community patrolling was given the mandate to be the "eyes and ears" of DOF.
- SSN was involved in coordinating and facilitating the visit of officials from the Kelantan Tourism Action Council to Gua Musang, and hence, was able to promote lesser-known destinations along Sungai

Nenggiri. This event is a significant achievement and has brought 'instant' recognition to SSN.

- SSN was formally invited to speak at a community workshop in Dungun, Terengganu, by the Terengganu Department of Fisheries. Through this event, SSN has been recognised as a community facilitator and partner of DOF for inland fisheries conservation in Peninsular Malaysia.
- SSN also organised a four-day expedition to Gunung Berangkat (highest peak at Sungai Nenggiri), an event that was officially launched by the local state assemblyman and also attended by the KESEDAR manager, and supported by the Ministry of Tourism. The aim of the activity was two-fold: i) to introduce a new SSN tourism package; and ii) to highlight the importance of protecting Sungai Nenggiri headwater catchments for its rich wildlife resources.
- PERHILITAN staff made field visits to Sungai Nenggiri in order to develop a module for the *Jungle River Ecology* course that would be introduced to trainee teachers and government officers during their initiation. SSN would be a partner organisation to PERHILITAN in the implementation of the module at Sungai Nenggiri.

POST-IMPLEMENTATION & SUSTAINABILITY

Monitoring

Although Sungai Nenggiri is slowly being recognised as an ecotourism destination, there is still much work to be done in order to ensure that this area is not polluted by upstream activities. SSN plays an important role because it is the only organised civil society group that is taking on this responsibility.

Further Funding

SSN has received a second phase of funding from SGP, and has also received funding from other institutions. In December 2006, SSN received a grant of RM10,000 from the Ford Foundation to develop a project on *Temiar* crafts. In April 2008, with the assistance of the Global Environment Centre, SSN was awarded project funding by the Community-Based Natural Resource Management (CBNRM) Facility to implement a project entitled *Empowering the Temiar Orang Asli Communities for Natural Resource Management in Sungai Nenggiri*. The funding of about RM 220,000 (USD 73,333) was focused on developing and promoting alternative livelihood options for the *Orang Asli* communities, especially the women folk. ■

Project 11

PHASE 2: INCREASING BIODIVERSITY-BASED SUSTAINABLE OPPORTUNITIES FOR SINGLE MOTHERS IN KELANTAN, FOCUSING ON ESSENTIAL OILS AND MEDICINAL HERBS AND PLANTS

Project Grantee: WIJADI (Wanita Inovatif Jayadiri/Empowered Innovative Women)

Project Period: August 2004 to August 2006

Phase 1: Kelantan Rural Women Living Sustainably in Harmony with the Environment
Project Grantee: WIJADI
Project Period: April 2001 to March 2003

Medicinal herbal garden set up in school to promote understanding and awareness

BACKGROUND

WIJADI was formed in 1999 as a community-based organisation (CBO) to assist and uplift the lives of single mothers by providing welfare benefits, by teaching them about their marital and legal rights on divorce, and by empowering women to engage in alternative income-generation activities.

In Phase 1, a herbal garden was set up near the WIJADI office, and members looked after it. The plant species were obtained with the help of the Kelantan Department of Agriculture, Malaysian Agricultural Research and Development Institute (MARDI) and the Department of Forestry. The women were trained in simple organic farming techniques, and information on herbal plants of medicinal value was imparted to the participants of the programme.

WIJADI helps single mothers and women initially through handling court cases, para-counselling, divorce settlements, providing shelter, giving food and consumables to tide over difficult times. WIJADI has a pool of women who are in constant need of assistance, and there are presently 40 women who are members or stakeholders of WIJADI.

PROJECT GOALS

The objectives of this project in Phase 1 were to

- increase awareness on the importance of biodiversity, renewable energy and local indigenous knowledge of plants;
- create avenues of sustainable income generation by setting up indigenous plant and herbal gardens with species that may be endangered or threatened; and
- create a participatory mechanism whereby community members will be actively involved in the preservation of biodiversity and conservation, and benefit directly from these efforts.

The objectives of Phase 2 were to

- create a biodiverse and holistic healing garden at a local hospital, and increase community awareness on holistic healing;

- mainstream and apply the experience and expertise gained from the project for future endeavours undertaken by the local community; and
- facilitate the interaction of local communities in Kelantan and elsewhere with other communities as a basis to start their own sustainable livelihoods in as many places as possible.

IMPLEMENTATION

A register on the knowledge of indigenous plants and its medicinal benefits was compiled, and the herbal garden was built and set up with a well-designed landscape.

Three plots of one acre each at Kubang Tuman (site of the farm) were planted with three main species: kaffir lime, basil and *serai*. In total, about 3,000 individual plants were grown in the plots. In and around the perimeter of the plots, vegetables, such as tapioca, pepper, water spinach and brinjal, were planted. These vegetables were harvested and sold by the women workers. The single mothers derived some income from the sale of vegetables. A solar-powered irrigation system was installed. It was a pilot demonstration for the feasibility of using renewable energy in a small farm.

Skills training in organic farm management were organised; in particular, composting and pest control techniques were taught. Post-harvest techniques of the kaffir lime, where leaves were air dried and packaged into wraps, and the making of shampoo, were taught to members.

The members operated stalls during certain events, selling herbal products, including the medicinal plants, essential oils, and sale of downstream products, such as herbal soaps. The Palm Oil Research Institute of Malaysia (PORIM) provided their soap-making facility for the project. There were paper presentations on the two SGP projects in two national seminars in Malaysia and one regional seminar in Bali, Indonesia, for farmer groups on how to link farmers and their produce to markets.

The School Herbal Project (SHP), which was supported by the Ministry of Education, enabled a herbal garden to be set up in the school compound. The SHP was publicised on TV and the print media.

BENEFITS & ACHIEVEMENTS

The project reached out to women, who are economically disadvantaged, poor and rural single mothers. At the time of project implementation, it was a novel idea in Kelantan to use renewable energy, such as solar power.

Replicating Herbal Gardens

There was a multiplier effect, i.e., when visitors came to the herbal garden located near the vicinity of the WIJADI office, they became interested, and awareness grew over time. The visitors would either set up a herbal garden in their own premise or identify a public site to set up a medicinal garden, thus creating a multiplier effect.

WIJADI contributed to awareness raising in 12 schools that participated and set up a herbal garden in their school compounds, and in two hospitals in which herbal gardens were set up.

Manual work (clearing land, preparing land for planting herbs, watering and adding fertilisers and harvesting) on the three plots was carried out by 12 dedicated single mothers.

Members of WIJADI with herbal products for sale

POST-IMPLEMENTATION & SUSTAINABILITY

Herbal Products

Kaffir lime is still cultivated in one plot, where fruits are harvested for shampoo making, and leaves are air dried since there is no mechanical dryer available. The air-dried leaves are used as wrap for post-natal treatment for women to reduce weight.

The production of candle, soap and essential oils has reduced as there was no substantial market for them. Competition from other big players in the medicinal plants sector is increasing, and it is a challenge to distribute these products through the retail chain. This has dampened the once-active cottage industry that WIJADI was involved in.

Motivation to Continue

Project activities carried on as long as funds were available. When funding stopped at the end of the project, the motivation of programme participants also reduced.

Source of Seeds

The herbal garden located in the vicinity of the WIJADI office will be maintained as the main source of seeds. Visitors could still collect seeds and seedlings of medicinal plants that they wished to plant in their homes.

Role of WIJADI

WIJADI continues to play an important role in the empowerment of single mothers by ensuring that they are independent and self-employed. The 12 active members who were involved in the two phases of the SGP project have taken small loans from Amanah Ikhtiar Malaysia (Malaysian microcredit organisation), and are self-sufficient.

WIJADI still provides members with capacity-building opportunities on environment, sustainable living and 'green-home' concepts. WIJADI also continues small-scale farming and the production of soap, essential oils and candles. ■

Project 12

PHASE 2: MAINSTREAM EFFORTS TO SUSTAIN THE MANGROVE ECOSYSTEM BIODIVERSITY IN PROVIDING LIVELIHOOD FOR LOCAL COMMUNITIES IN SEMATAN, SARAWAK

Project Grantee: AZAM (Angkatan Zaman Mansang/Movement for Progress)[13]

Project Period: October 2005 to October 2007

Phase 1: Sustaining the Mangrove Ecosystem Biodiversity in Providing Sustainable Livelihood for Local Communities in Sematan, Sarawak

Project Grantee: AZAM

Project Period: June 2003 to June 2005

Aquaculture ponds for mud crab culture provided to the community

BACKGROUND

AZAM, set up in 1983, is a non-governmental organisation in Sarawak concerned with issues affecting the local community in Sarawak. By working in close partnership with state government agencies, the community, media, national and international organisations, AZAM has contributed and will continue to contribute towards the advancement of Sarawak society.

Before the conservation projects were implemented, logging in the mangrove forest has been the main income-generating activity for the local communities at Kampung Trusan Jaya in Sematan. Almost all the villagers depend on inshore fishing and logging activities to make ends meet.

Since 2003, mangrove conservation projects have been carried out successfully in two phases in Kampung Trusan Jaya through the funds provided by the SGP grant.

The project focused on raising awareness mainly on the importance of mangroves, restoring degraded areas of mangroves, promotion of crab culture (Phase 1); and exploring ecotourism potential with alternative income (Phase 2), including homestay facilities. Phase 2 also focused on building on available infrastructure, such as boardwalks and jetties.

PROJECT GOALS

The objectives of this project were to

- build the capacity of the local communities in preparation for the implementation of Kampung Trusan Jaya as an ecotourism and business centre;
- conserve and sustainably use the mangrove forest, particularly *Rhizophora spp.* and *Bruguiera spp.,* which are the main mangrove species being logged; and
- further pursue poverty alleviation among local communities by improved income generation through sustainable livelihoods: captured fisheries activity, soft-shell crab culture, traditional food cottage and downstream fishery products.

Left page: [13] Angkatan Zaman Mansang is a non-profit, non-governmental organisation that seeks to facilitate development efforts in Sarawak by promoting development communication.

IMPLEMENTATION

Overall, the local community and project participants had planted a total of 11,500 mangrove tree seedlings through *gotong-royong*. Only one mangrove tree species (*Rhizophora spp.* or locally known as *bakau minyak*) was planted.

Forty-one participants from the local community were selected to be involved in the project: 10 for crab-capture fishery, 6 for soft-shell culture and 25 for the traditional food cottage and downstream fishery products.

Capacity building and training in the use of computer and simple software was undertaken for 200 persons.

BENEFITS & ACHIEVEMENTS

The project focused on three aspects: (i) conservation of mangroves and the provision of seedlings for replanting; (ii) alternative income or increased income for men and women; and (iii) ecotourism potential based on the crab-culture project.

Awareness was created on the importance of conserving the mangrove forest. This was demonstrated by reduction in logging in the mangrove areas. In addition, there was non-dependence on mangrove forests as the only source of income. The income of the local community increased, though it was not measured. A voluntary group, consisting mainly of the People's Volunteer Corps (RELA) members, was set up to patrol the area to ward off encroachers.

This was the first awareness project at community level to support a pen-based culture of mud crabs. AZAM demonstrated that it was possible to have pen cultures of mud crabs, and that ecotourism was a feasible business venture, and which became a reality.

The downstream industry related to fisheries was developed, and the local community was given capacity training and enhanced knowledge. These activities enabled the community to become empowered.

POST-IMPLEMENTATION & SUSTAINABILITY

Spin-offs from Phases 1 & 2

About RM 2.5 million (USD 833,333) was provided by the Sarawak government for the pen-culture project.

Part of the awareness-raising activity resulted in information and communication technology (ICT) training for 200 youth members. The training was provided based on a survey and feedback that identified poor knowledge of ICT as a learning gap for youth in the area.

Training was related to conservation of mangroves in Kampung Trusan Jaya. Although ICT training was provided, a website for ecotourism in Kampung Trusan Jaya was not created.

Better Quality of Life

There was an increase in income among community members as seen from the renovation of their village homes, and affordability to buy and own motor vehicles. However, income received was not measured.

The government provided electricity supply to the community as a result of the intervention of the two SGP projects.

Soft-shell crab culture ponds abandoned and overgrown by vegetation

On-Going Programmes

The Department of Fisheries provides support for know-how and technical matters.

The soft-shell crabs (Phase 2) have ready buyers: Kumpulan Muhandis Sdn Bhd, and D'Alif Restaurant (based in Bukit Bintang and Kuching). Five more participants were given financial aid to carry on pen culture for mud crabs from the Ministry of Rural Development almost after the project ended. The crab-pen-culture activity yielded an average net income of RM 2,000 (USD 667) per month for each participant.

Kampung Trusan Jaya has been marketed as an ecotourism product in Sematan/Lundu District by the Sarawak Tourism Board, with the support of the Ministry of Tourism and the Sarawak Tourism Council.

The local community participated, and was willing to work with the Jawatankuasa Kemajuan and Keselamatan Kampung (Village Security and Development Committee) of Kampung Trusan Jaya.

Mangroves have been reforested by the Sarawak Department of Forestry and Sarawak Forest Corporation.

An aquaculture project was developed at Kampung Trusan Jaya with assistance from the Sarawak Land Development Board and PELITA (Land Custody and Development Authority). ■

Replanted Rhizophora *plants after four years*

Sustainable Ventures

The people of Kampung Trusan Jaya have alternative sources of income to sustain their livelihoods, such as mud-crab farming, homestay programme, traditional food cottage and downstream fishery products.

The development of the traditional food cottage industry by project participants at the Women Entrepreneur Centre continues after the completion of the SGP project. Handicrafts made of sea shells/shellfish parts are also produced by project participants. These activities are examples of sustainability through SGP project intervention at Kampung Trusan Jaya.

Project 13

CONSERVATION AND SUSTAINABLE USE OF RICE BIODIVERSITY: AN INTEGRATED PROJECT INVOLVING THE INDIGENOUS RICE-GROWING COMMUNITY IN TANJUNG PURUN, SARAWAK

Project Grantee: Foundation for Agriculture, Environment and Education (ECOFARE)

Project Period: Phase 1: January 2003 to December 2004
Phase 2: October 2006 to April 2009

Sun-drying facility: Innovative drying yard built by farmer to support milling operations

BACKGROUND

Sarawak is rich in rice biodiversity. Traditional farmers in Sarawak know the value of keeping a few varieties of rice in their fields to reduce crop damage due to pests and diseases. However, traditional varieties face competition from short-term inbred varieties because these could be harvested earlier to produce higher yields. This project was conducted with local rice farmers and local communities in three sites in Sarawak: Tanjung Purun, Skuduk and Chupak.

PROJECT GOALS

This project was undertaken to raise the interest and awareness in Sarawak's traditional rice varieties, and the negative impacts of using chemical pesticides and fertilisers on the environment.

The main objectives of the project were to:

1. conserve traditional rice varieties;
2. increase yields by practicing a sustainable agricultural system without using too much agro-chemicals; and
3. increase awareness of the importance of integrated pest management in order to maintain ecological balance.

Phase 2 of this project continued with similar goals, and was based on the following objectives:

1. To conserve traditional rice varieties;
2. To increase rice yields by sustainable agricultural methods;
3. To recognise the importance of integrated pest management and good agricultural practices in traditional rice fields;
4. To promote the use of biofertilisers, and reduce the use of chemical fertilisers; and
5. To increase the participation of farmers in downstream activities, such as drying, milling and packaging.

IMPLEMENTATION

Phase 1

Rice Planting

The community in Tanjung Purun was already growing 128 traditional varieties and new inbred varieties. This project, through ECOFARE (a non-governmental organisation) and the Agricultural Research Centre, introduced 50 other traditional varieties to the area.

Rice yield was increased by optimising planting density (spacing between plants). Prior to the project, planting density was too wide. The project introduced a closer planting density of 30 cm x 30 cm. This effort increased average yield from 2 – 3 tonnes to 5 tonnes per hectare. This approach was also replicated by other villages.

Biofertilisers

Sesbania and *Azolla* are nitrogen-fixing plants in rice fields. Both are biofertilisers, and would enable a reduction in the use of chemical fertilisers. *Sesbania* was grown, rotovated and incorporated in the rice fields before planting. *Azolla* is a water fern, but is easily killed by herbicides in the rice fields.

Duck Rearing

This project introduced the rearing of ducks, which feed on weeds and insects. In addition to controlling pests, ducks are also a source of fertilisers, and they keep the soil condition healthy. In farms where this approach was piloted, ducklings, fencing and duck pens were provided, together with feedstock.

Milling room built in Phase 2

Phase 2

Sun-Drying Facility

In addition to continuing efforts from the previous phase, a sun-drying facility was introduced to improve the local method of spreading straw mats within their compound. The facility is built on a cement foundation with a retractable roof. Compared to the traditional method of sun-drying, this approach was able to prevent loss during the drying stage, and resulted in higher quality of paddy. It is more efficient as drying time is reduced from a full day to only four hours, even if it rains.

Rice Milling

A micro-mill was introduced to improve farmers' participation in value-added operations in the farm. It responded to the problem of low-quality output from using conventional mills. Traditional rice varieties grown in small quantities if mixed with other rice varieties, generated a low market price, and hence, low income.

A rice mill capable of effectively processing small amounts of paddy of different varieties was purchased. Farmers were able to sell rice processed by this mill at premium prices compared to selling direct to other mills. The increase was estimated at between 300 and 500 percent. However, the volume of rice sold was very small. The mill, which was made available to other villages, was operated by a local farmer for a minimum charge of RM 2.50 (USD 0.83) for 60 kg of paddy to cover utility and labour expenses.

BENEFITS & ACHIEVEMENTS

Innovations

This project promoted the conservation of diversity of traditional varieties of rice, and the sustainable production of rice. It increased farmers' awareness and knowledge of the conservation and sustainable use of biodiversity related to rice agro-biodiversity.

Specifically, the project introduced four innovations that enabled farmers to increase their revenue:

- increased planting density
- biofertilisers
- retractable roof for sun-drying rice
- high-quality mill.

Higher Yield

The main benefit of this project was the higher average yield: from 2 – 3 tonnes to 5 tonnes per hectare by optimising planting density to 30 cm x 30 cm. This approach was also replicated by other villages.

Rearing ducks in the paddy fields during the project

Yields were also increased with biofertilisers from ducks and nitrogen-fixing plants (*Sesbania* and *Azolla*). This project improved awareness on the importance of integrated pest management in order to maintain ecological balance, and included capacity-building training to monitor pest population by identifying useful insects and harmful pests.

Resource Materials

Through this project, three resource materials were produced and disseminated:

- Video CD of the steps involved in this project;
- Book on rice biodiversity of Sarawak;
- Manual on integrated crop management as a tool for sustainable use of agro-biodiversity.

POST-IMPLEMENTATION & SUSTAINABILITY

Planting Density

Efforts to continue high-yield but low-cost practices, such as closer planting density, were easy to sustain. The optimisation of planting distance to increase yield is still being practiced. Planters in the Skuduk and Chupak villages followed this approach.

Cost of Sun-Drying Facility

Other practices faced difficulties. The sun-drying facilities constructed during the project period are still functioning. However, this approach was not replicated as the cost of construction is high: about RM 2,500 (USD 833). Instead, these dryers are loaned to other villages when it is not used.

Obstacles to Duck Rearing

Ducks are difficult to maintain without funding because feeding cost is high. In addition, farmers have to incur other costs to build fences against dogs and iguanas. The other threat is avian flu. Due to these difficulties, ducks are no longer reared in these project sites.

Replacement for Mill

The operation of the micro-mill encountered a major problem. It broke down in 2008, and the cost was too high to import the relevant parts. However, instead of sending the rice to a commercial mill, the owner intends to install another mill because it has the potential to increase income from higher quality of outputs.

Integrated Pest Management

Efforts to promote integrated pest management and reduction in the use of chemical fertilisers encountered challenges. The use of *Sesbania* was halted because the village did not have a rotovator to incorporate it into the rice fields. The cultivation of *Azolla* is difficult because it is easily killed by herbicides. Considering that from 2008, pesticides and fertilisers were given out free, it became difficult to promote integrated pest management and reduction in the use of chemical fertilisers.

Rice fields at project site

Common Goal Lacking

Although efforts were made to build capacity of farmers, and the project worked with the JKKK (Village Development and Security Committee) in Skuduk and Chupak, it lacked 'drive' at the community level. Compared to rural communities, the communities at the three project sites (Tanjung Purun, Skuduk and Chupak) were more individualistic because they live closer to Kuching city. Participants consisted of individuals who were interested in project activities. After the project ended, there was no common goal or reason to maintain their efforts to solve their group or common problems. Compared to other undertakings, this project did not have a strong local community group as the champion. ■

Project 14

COMMUNITY PARTICIPATION IN THE SUSTAINABLE MANAGEMENT AND FISHING OF TERUBOK IN DARO, SARAWAK

Project Grantee: Sarawak Development Institute (SDI)

Project Period: Phase 2: November 2004 to December 2007

Gotong-royong *to prepare ponds for aquaculture*

BACKGROUND

At an international conference on *terubok*[14] fish in 2001, the Sarawak Development Institute (SDI) realised the seriousness of the threat caused by over-fishing, and the need for conservation as numbers were dwindling in Sarawak rivers.

Phase 1 (2001 – 2003) of the SGP grant was targeted at the fishing community in Kampung Teba'ang, Daro, Mukah District, Sarawak. The project activities aimed to reduce the dependence on *terubok* fishing by providing awareness on the need for conservation of *terubok* and its habitats. Efforts in this direction resulted in the gazetting of a 'no-fishing zone' during certain months. In May 2003, the Sarawak government passed the Fisheries Ordinance that covered the sustainable management of threatened fish species, including *terubok*.

In Phase 1, initial work was carried out on alternative livelihoods but this was intensified in the continuing phase from 2004 – 2007 with a microcredit scheme that emphasised training and skills of the Kampung Teba'ang community. The approach taken by SDI was in line with the community's needs: the training skills and capacity of the villagers was assessed through a project/training needs analysis workshop.

PROJECT GOALS

The objectives of this project were to:

- achieve sustainable, environmentally-compatible *terubok* fishing through community participation;
- reduce the fishing communities' dependence on *terubok* fishing by encouraging them to adopt alternative livelihoods; and
- reduce as far as possible the consumption of *terubok* and *terubok* eggs by the fishing communities and the public at large.

14 *Terubok (Tenualosa toli)* is a riverine and brackish-water fish unique to Sarawak rivers.

Terubok *fish*

IMPLEMENTATION

SDI explored alternative livelihood options and sought opportunities in which interested villagers could be involved in income-generating activities. Special skills training were provided for alternative income-generating activities, e.g., tailoring and carpentry.

SDI improved community participation through regular dialogues with small groups of community members. Subsequently, the active involvement of community leaders was enhanced.

There was improved engagement among the Department of Agriculture, local district departments and villagers in Daro.

SDI assisted in organising talks on conservation of the environment.

Encouraging women's participation in community

BENEFITS & ACHIEVEMENTS

Conservation Awareness

There was increased understanding among villagers on the do's and don'ts of *terubok* conservation and management.

Fishing Regulations

The Sarawak government enacted two policies: State Fisheries Ordinance (May 2003), for the sustainable management of threatened fish species; and State Fisheries Notification 2007, to restrict fishing in Batang Lassa, Daro. The SGP project was a catalyst for the government to intervene with clear policy directions with regard to fishing.

Changing Mindsets

Fishermen were initially adverse to stop fishing for *terubok,* but after the ordinance came into force, they complied, and found that the fish catch was better. During the 'closed' season, the fishermen moved to more land-based activities, and also repaired their nets, fishing gear and boats. This change in the fishermen's mindset took two years.

Though Kampung Teba'ang complied with the fishing regulations, Kampung Badong, a nearby fishing village, continued fishing at the mouth of the Batang Lassa as it did not come under the restricted zone. These differing scenarios in two adjacent villages did not auger well with Kampung Teba'ang villagers.

Microcredit Scheme

A total of RM 46,810 (USD 15,603) was loaned as microcredit to 29 participants, with each receiving between RM 500 (USD 167) and RM 3,500 (USD 1,167). Under the scheme, the borrower would sign a contract with SDI, and SDI personnel would buy the equipment for the participant. Monthly repayments would depend on the profit generated.

When the continuing phase of the project ended, the management of the microcredit scheme was handed over to the Daro Area Farmer Organisation (DAFO). Othman Bussaie, SDI's local focal point, helps SDI to check on the status of loan repayments.

Solhi Salleh feeding oil palm fruits to fish cultured in ponds

POST-IMPLEMENTATION & SUSTAINABILITY

Infrastructure Development

Two years after the project started, the local government provided basic amenities, such as water and electricity supply, and upgraded the dirt tracks to tarred roads. Communication is faster and accessibility to the village has improved. Villagers realised that these infrastructure developments were due to the SDI project through SGP intervention.

Better Quality of Life

Villagers undertook small-scale ventures, such as farming, tailoring and carpentry, and explored more business opportunities to generate extra income. They, especially microcredit borrowers, were able to improve their standard of living as could be seen in the renovations and refurbishments to their homes. Such changes indicate enhanced future livelihoods of people in Kampung Teba'ang.

Some skills, such as making blowpipes and knives, acquired through the project, allowed them to pursue hobbies; e.g., carpentry skills enabled them to repair their houses in their spare time.

Alternative Livelihoods

Villagers have explored alternative livelihoods, such as fish/prawn aquaculture, and local craft making.

Community members who are hardworking are still motivated, and very successful even three years after project completion. Others have not shown much tenacity to continue alternative income activities as the new skills acquired did not work for them. They continue with their old livelihoods, such as fishing, paddy farming and doing odd jobs in oil palm plantations. Othman, the local focal point of SDI, thinks that in the future, fishing and paddy farming will gain importance, or remain as the main livelihoods.

Vegetable farming

Burden-Free Loans

The microcredit programme was perceived as a useful scheme that did not necessarily burden the participants with repayment schedules.

The small traders and business-people also have their own loan schemes called *hoi*, which is like *kuttu* (tontine).[15] This scheme is based on trust among *hoi* participants.

Community Cohesion

Leadership is an important element in the socio-economic setting of Daro. Since the *ketua kaum* (village head) did not show a keen interest in the welfare of the Teba'ang community, and did not facilitate effective communication within the community and outside (district office), the cohesiveness of the community was not strengthened.

In some cases, the alternative income venture was not the only form of revenue, and this made community members more cooperative in a collaborative manner.

Role of SDI

SDI took two years to understand the dynamics of the community, and to gain its acceptance. After two years, the mindset of the community changed, and they were open to learn new skills and trades.

SDI acted as an intermediary between Kampung Teba'ang and the Department of Agriculture, which was willing to provide technical assistance and advice on farming techniques, and to provide seedlings for small-scale farms and nurseries.

Originally from the Daro area, Mohammad Nazlan Annuar of SDI understands the local scenario and issues. He has a strong relationship with the community, and wants to motivate and empower them. Though SDI does not officially monitor activities after project completion, Mohammad continues to mobilise the village community when he visits his relatives who are fishermen living there.

SDI knew that an influential role model, like Solhi Salleh, an entrepreneur from Kampung Teba'ang, could motivate the community as he gradually became successful as an initial recipient of the microcredit scheme. He is involved in several ventures, including aquaculture, and is very helpful to his community by sharing his knowledge and experience. ■

15 Tontine is an unofficial means of raising money through a consensus between members of an informal group.

Project 15

INTEGRATED COMMUNITY-BASED MICRO HYDRO SYSTEM TO IMPROVE SUSTAINABILITY LIVELIHOOD OF INDIGENOUS KENYAH COMMUNITY IN MUDUNG ABUN, BELAGA DISTRICT, SARAWAK

Project Grantee: IPIMAS (Institut Pribumi Malaysia Sarawak/Indigenous People's Institute Malaysia Sarawak)

Project Period: September 2008 to August 2010

River that supplies water for micro hydro power scheme at Mudung Abun

BACKGROUND

IPIMAS is a community-based organisation (CBO) that started in 1994. It supports indigenous communities in Sarawak to attain sustainable livelihood through land tenure security, sustainable development options and best management practices in conservation and utilisation of natural resources within their customary land area.

The founders of IPIMAS wanted to assist their own Kenyah community with a sustainable mode of energy. The Kenyah community, led by IPIMAS, implemented the community effort to install the equipment and micro hydro[16] system so that the community would benefit from this sustainable method of generating electricity.

PROJECT GOALS

The objectives of this project were to:

- build a micro hydro system (MHS) to provide the community with reliable, clean and environment friendly source of renewable energy;
- promote forest conservation and biodiversity enrichment through establishment of community-protected water catchments and the surrounding forest areas;
- develop and strengthen socioeconomic development activities from energy harnessed by the micro hydro system; and
- empower indigenous communities and NGOs in the implementation and management of a community-based conservation project.

IMPLEMENTATION

The community-led MHS was installed to provide 25 kilowatts of renewable electricity. The installation included the preparatory civil engineering, mechanical and electrical work.

Training was provided to the indigenous people on project implementation and management, including project design and planning.

16 Micro hydro is a term used for hydroelectric power installations that typically produce up to 100 kilowatts of electricity.

A community workshop was held on awareness raising on sustainable utilisation and management of forest resources, water catchment areas and biodiversity.

Exposure visits were undertaken to other sites where micro hydro schemes were installed. These trips facilitated sharing and learning of issues, problems and approaches for a community-led activity in implementing a hydroelectric scheme.

Clearing trail to project site

Gathering rocks for reinforcing concrete at micro hydro facility

BENEFITS & ACHIEVEMENTS

Economics of Renewable Energy

The project was an example of climate change mitigation at the local level since renewable energy, instead of diesel (fossil fuel), was used to generate electricity.

The direct benefit of the micro hydro system (which provides 25 kilowatts for 30 households with an estimated population of 300) was in the improvement of the living conditions and standard of living of the villagers at Mudung Abun.

Family expenses would increase if the community continued using fossil fuels. Before the installation of the MHS, about RM 300 (USD 100) per month per household was spent on diesel for daily usage of electrical appliances from 7 pm to 10 pm. With the sustainable renewable energy method, electricity is free for the villagers.

Noise and air pollution was reduced by substituting diesel generators with this clean and renewable energy alternative.

With this alternative form of energy, villagers could use electrical appliances, such as television sets, washing machines and refrigerators. They could store fresh produce, vegetables and meat in the refrigerator to prevent these items from rotting, and perishable foods could be kept for a longer shelf life. With continuous electricity supply, the community could use electrical items at any time with minimum monthly charges.

Children could be encouraged to complete their school homework at night as free electricity was available.

Villagers could keep abreast of information about the world through television and radio documentaries and news broadcasts.

Project staff at turbine room

Hauling of turbine and generator

Replication

People from other villages observed the development of the project, and wanted a similar sustainable micro hydro project to be implemented in their village as they saw huge benefits from free and clean electricity.

The IPIMAS leader saw the benefits of a similar project elsewhere and wanted to replicate it in his own village.

Community Ownership & Participation

The community was deeply interested to carry out this project together, and there was cooperation and a sense of ownership in the implementation of the project, in which community participation and interaction was enhanced. Most of the community members wanted to assist in the project – from a 70-year-old *ketua kaum* (village head) to a six-year-old child, who would help in lighter tasks by carrying small rocks and sand to the weir[17] site.

Challenges Encountered

Labour was a problem as 50 percent of village inhabitants had jobs located far from the village, and could only help on weekends or after they returned from work in the evening. Many volunteers from other areas in Sarawak, Sabah and Brunei also helped out.

The unpredictable weather posed a serious problem. Cementing works depended on dry weather, and rain would also wash away the glue used to keep parts together. Dampness delayed the completion of the project.

Fifty percent of the community who took part in the project had a deep sense of dedication. The work force involved all physically able men, women, youth, children and those who were employed elsewhere and who came during their available time or on weekends to help.

Most of the teachers originally from the Mudung Abun Village but who worked in schools far from home would come during school holidays to assist in the project. They wanted to participate and were motivated to help whenever they could.

17 A weir is a small overflow dam used to alter the flow characteristics of a river or stream.

Construction of tailrace and drainage

POST-IMPLEMENTATION & SUSTAINABILITY

Project Maintenance

Once in three months, the river and forest areas must be cleaned, and overall maintenance must be undertaken. The majority of the community is involved in continuous repair and maintenance work through *gotong-royong*.

The project technical adviser was very competent and trained the community in the design and building of the infrastructure for the MHS.

The maintenance committee has four individuals: two operators and two others to help in maintenance work. A maintenance schedule has been drawn up: patrolling by two people three times a week when it does not rain. If it rains, than the patrol team would go to the water intake point to check the situation of the weir and the forebay at the source.

Community Cohesion

The cohesiveness of the Mudung Abun community is laudable for the success of this community project. All those who were directly or indirectly involved in implementation have a sense of pride and ownership in the project.

The community in Kampung Long Lawen Tekulang was very keen to share information with Kampung Mudung Abun about a similar project that was implemented 10 years ago in their village. The crucial part was to ensure that the weir and forebay areas were clean and not clogged with leaves and plant debris. Maintenance is critical to ensure that the turbine and generator were in working order at all times.

Installation of turbine

Funding

The only problem would be sourcing for funds when project funds and co-funding sources run dry. Funds would be required to buy spare parts as a result of wear and tear (breakdown) of mechanical and electrical components.

The management committee has decided to collect a minimum monthly fee from each household for the maintenance of the hydroelectric installation.

Ecotourism Initiative

From this project, there is an interest to create a community-based ecotourism initiative; and to collect a fee from each visitor who is interested

to learn about the MHS. Homestays could be established, and various tourist features could be added to their stay, based on earlier achievements of the DANIDA-funded community-based natural resources management (CBNRM) project. They could get visitors to the site but they must be able to view a variety of attractions, walk along the trails, and taste the culture and food of local villages. IPIMAS is willing to help in the publicity of the ecotourism initiative.

Collective Good

The villagers want to showcase a collective community effort that made a difference to their lives; there is a deep feeling of cooperation and willingness to help one another until the end result is realised by the entire community. They want to tell others not to give up when faced with problems such as weather, breakdown of mechanical and electrical parts, and delays in getting mechanical parts. The community at Mudung Abun is a very cohesive one, and is mature enough to understand the benefits of the project for the collective good of community that outweighs personal difficulties and grievances.

Souvenir presentation

Technical Solutions

The penstocks continue to burst either due to water pressure differences or not being glued properly to the uneven surface. There is also the problem of hill slopes stability in which a slight movement or minor landslide could cause breakage to the penstocks.

Teething problems still exist; these could be solved, for instance, by getting spare parts, valves, pipes and other important parts from Bintulu (about 164 km away). Purchase orders must be made in advance; and then delivery of goods awaited.

The committee discusses regularly on how to fix problems, and to mobilise community members who have the know-how to fix problems due to prior training given to them with hands-on experience. ■

Project 16

PROMOTING DEMONSTRATIONAL PLOTS OF MEDICINAL PLANTS AND HERBS BIODIVERSITY AND THEIR RELATED TRADITIONAL KNOWLEDGE

Project Grantee: Institute for Development Studies, Sabah (IDS)

Project Period: February 2003 to February 2007

Nursery to cultivate herbal species

BACKGROUND

The size of the project site (initially gazetted as grazing reserve) for the medicinal plants was 215 acres, and located about 25 km from Kota Kinabalu city.

An integrated development plan, in which indigenous medicinal plants with a value chain would be grown, was prepared in order to de-gazette the land, and change its status to 'alienated land' for project development by the Sabah Agro-Industrial Precinct (SAIP).

Five acres of the site were converted for the demonstration plots, and IDS invited community members to work with them to plant suitable species of medicinal plants.

One of the objectives of IDS was to establish a herbal farm, and the project was intended to involve stakeholders. IDS sought funds from the Global Environment Facility (GEF) through its Small Grants Programme (SGP).

PROJECT GOALS

The objectives of this project were to:

- design and test demonstrational plots of medicinal plants
- provide a test bed for commercial domestication of selected herbs for the SAIP herbal industry;
- enhance the livelihood of local communities; and
- enhance the biodiversity of medicinal plants and herbs in a sustainable manner.

IMPLEMENTATION

About 200 species of herbs which had medicinal value were planted at the five-acre site. A nursery was set up to hold the parent or mother plants.

Commercial-value plants, such as roselle, citronella, *lengkuas* and tea tree, were mass cultivated, processed and commercialised.

IDS created awareness and attracted the interest of the Sabah government, and also academia on the economic potential of medicinal plants and indigenous plant species of Malaysia as a source of biotechnological advancement.

Capacity-building workshops were implemented to share sustainable practices on farming techniques and land preparation for planting the species.

The livelihood potential of the local community having their own herbal gardens and selling the processed products was also explored.

BENEFITS & ACHIEVEMENTS

Commercialising Medicinal Products

IDS showcased the planting of medicinal herbs in an urban environment (ex-situ, or off-site) to show that these could grow in urban areas and not only in the wild or remote areas. This was the first herbal garden in Kota Kinabalu city in 2003. IDS created an awareness of this type of activity, and the economic potential that could be derived from commercialising medicinal products.

The herbal and medicinal garden concept was replicated by other government agencies, such as the Departments of Agriculture and Forestry, and then later by PACOS,[18] a community-based organisation (CBO). Some local hospitals and a few schools developed a herbal garden after IDS had conducted training and awareness activities. More interested parties joined the herbal planting group, and perceptions of people gradually changed as they got involved, and as replication was taking place.

Rows of herbal medicinal plants being cultivated in shaded area

Nursery Conservation

This project brought together people from rural areas who helped to source the plant species from nearby forests, degraded land and backyard areas. These people sourced the plants and gave it to the project implementers to plant them in the nursery, which was a good way to conserve the species. This was significant to protect the germplasm of indigenous species – thus, an important strategy was implemented through this project.

Marketing Agency

To market the products, IDS set up a subsidiary company KPS Sdn Bhd with a capital of RM 20,000 (USD 6,667). *Pegaga* was cultivated and packed together with dried tea leaves in tea bags. This did not need the approval of the drug control authority of Malaysia as it was a herbal tea product, and serves also to be used in body therapy, such as sauna herbs. Initially commercialised as Borneo Farm products, and registered as a trademark, it was

18 Partners of Community Organisations (PACOS Trust) is a community-based voluntary organisation that helps raise the quality of life of indigenous communities.

sold in public markets (e.g. *tamu*), pharmacies and some retail shops. Borneo Farm did not develop into a large commercial business.

Product development and tissue culture laboratory

Training & Information Dissemination

IDS organised capacity-building workshops to share the information and train other like-minded groups. Being a CBO mandated to empower indigenous groups, PACOS was brought in to disseminate the information to other local and remote communities.

House to facilitate work on demo plot site

POST-IMPLEMENTATION & SUSTAINABILITY

Commercialising Tea Tree Oil

Four years after project completion, the demonstration plots had been cultivated with tea tree (*Melaceuca altenafolia*) with seeds sourced from Australia through collaboration efforts. IDS, with the Sabah Economic Development and Investment Authority (SEDIA), had employed workers to look after the demo plots.

The tea tree plantation progressed as the propagation protocol to commercialise tea tree oil was established. The chief executive officer of SEDIA mooted the idea to plant the tea tree species on the existing demo plots so as not to waste the efforts of this project.

Biotechnology Research & Development

The Ministry of Science, Technology and Innovation (MOSTI) gave two grants worth RM 250,000 (USD 83,333) for biotechnology research and development. A microbial degrader and other laboratory equipment were bought to do composting to ensure a source of organic fertilisers for the farm.

IDS collaborated (from 2006 to 2010) with Universiti Malaysia Sabah to use the facilities at the university, such as laboratory equipment, for processing plant products. At the same time, the biotechnology students went to the field to learn and undertake research, and write their graduate theses while enhancing their knowledge about the ecology of herbal plants.

IDS has two laboratories at the site: one for enhancement of product development, and the other for tissue culture. Scientific equipment was bought from the funds obtained from MOSTI.

With two cycles of funding from MOSTI, this project has expanded: from small demo plots and herbal garden nursery to a research and development centre with equipment for distilling the plant products, and facilities for tissue culture.

Rachel Andrew Nusius, who was employed since the inception of the project, is still working for IDS (since emerged with SEDIA), and remains very enthusiastic about the research and development potential of indigenous plants.

The Malaysian Industrial Development Authority (MIDA), which develops policies and creates an enabling environment for entrepreneurs and businesses, had provided an opportunity for IDS to promote and enhance biotechnology development.

Nursery Infrastructure

The nursery still houses about 30 plant species which are well looked after by the project officer. The majority of the land is cultivated with tea tree.

The site has been retained with a nursery area for *pegaga, serai wangi, mengkudu,* and tea tree nursery. A laboratory has been established at the site. More land has been cultivated with the tea tree species.

Documentation on Medicinal Plants

Information has been documented on all medicinal plant species (about 135) that were grown at the site since 2003, including scientific names, photographs and medicinal properties.

*Rows of pegaga (*centella asiatica*) planted for germplasm and for phytochemical screening*

Revenue Streams

Sales of the tea tree products and sauna herbs with lemon citronella did not bring in sufficient income to cover the cost of maintenance of the medicinal cum herbal garden, so IDS had to look for other means, such as the cultivation of commercial species, such as tea tree, to earn more revenue.

There was not much interest from small and medium enterprises (SMEs) to explore this type of activity during the early days of the project. However, more recently, banks and financial institutions are providing loans to help people embark on small-scale industries; for example, medicinal herb farms.

A new approach to business through electronic commerce has been explored. The IDS website is one of the platforms that promotes the sale and marketing of herbal products. Overseas orders (from individuals and organisations) have been received for the herbal products. ■

Project 17

COMMUNITY-BASED MICRO HYDRO AND WATERSHED CONSERVATION FOR KAMPUNG BUAYAN, PENAMPANG, SABAH

Project Grantee: TONIBUNG (Friends of Village Development)[19]

Project Period: September 2008 to May 2010

Water reservoir to generate electricity through micro hydro system

BACKGROUND

Kampung Buayan is a remote village in the District of Penampang, Sabah. Located within the Crocker Range Park, it is one of the few villages connected through the ancient "salt trails" that were once the only transportation route across the Crocker Range between Sabah's interior and west coast. Due to its location, Kampung Buayan is very far from the electricity supply grid, does not have access to fixed line telecommunication, and has extremely weak mobile phone coverage. Fossil fuels such as kerosene and diesel are painstakingly transported to this village for the use of generators and lamps.

PROJECT GOALS

- To build a 10-kilowatt micro hydro system to provide sustainable energy for Kampung Buayan;
- To build capacity of the community to manage the micro hydro system; and
- To facilitate a watershed conservation programme to ensure sustainable clean water supply for the community and the micro hydro system.

Mainly, the project aimed at eliminating the use of expensive and polluting fossil fuels. In addition, the use of electricity has the potential for the local community to improve their quality of life. Better livelihood opportunities could be derived through equipment and facilities that are operated by electricity: rice mill, freezer, welding workshop and possibly, an electric planer for wooden planks.

IMPLEMENTATION

SGP funding mainly contributed to equipment and mapping of the watershed area. The project also received co-funding from various sources: Danish International Development Assistance (DANIDA), for capacity building;

Previous page:

19 TONIBUNG is an acronym for *Tobpinai Ningkokoton Koburuon Kampung*, which translates as 'Friends of Village Development'

the local Member of Parliament contributed the transport of building materials by helicopter; and local community participation, for the construction of the reservoir, powerhouse, turbine installation, laying of pipes from the reservoir to the powerhouse, laying of transmission cables (about 3.5 km), and wiring to houses. There were also monetary contributions from local state assemblyman, and contribution of consultant fees from Era Wira and Heksa Hydro.

Stakeholder consultations were carried out with regard to land use and resource management. Overall, there was positive support from Sabah Parks, and also from members of the Global Diversity Foundation, who research in community-use zones in the village.

BENEFITS & ACHIEVEMENTS

Kampung Buayan experienced 'clean' electricity for the first time in June 2009 and the micro hydro system was officially launched on 27 July 2009. Since then, 20 houses from the community have had access to 24-hour 'clean' electricity supply from the micro hydro system.

Each house is supplied with at least 250 watts, which is regulated using a one-ampere-rated miniature circuit breakers (MCB) to provide electricity for three lights and a plug point for an electrical item, such television or refrigerator. This project has succeeded in uplifting the standard of living of this village.

The micro hydro system brought together the villagers, who were involved in its planning, design and construction. A committee has been established to manage operational issues related to the micro hydro system, such as repairing pipe leaks and gasket, and removing debris in the turbine. Since the system started operations, the village has been able to maintain it, and manage its watershed areas.

Villagers have skills to maintain turbine

Improved Quality of Life Through Clean Energy

For Kampung Buayan, 'clean' electricity means increase in household savings, reduction of labour for using fossil fuels, cleaner air quality, improved quality of life from better quality of light, ability to do work in the evenings, use of electrical appliances (such as refrigerators), increased access to telecommunication, information technology and entertainment.

Access to ICT: *EBuayan*

With reliable electricity supply, Kampung Buayan was able to access information and communication technology through a telecommunication centre called *EBuayan*. The centre was conceptualised by the Centre of Excellence for Rural Informatics (CoERI) of Universiti Malaysia Sarawak (UNIMAS) with the collaboration of the Ministry of Science, Technology and Innovation (MOSTI), and the Buayan community. *EBuayan* was modelled on *EBario* – a similar project based on solar power in Bario, Sarawak. *EBuayan* managed to save RM 20,000 (USD 6,667) in its implementation, and the saving was used to get better equipment. The *EBuayan Project*, which was completed in January 2010, enabled the community to have access to ICT.

The E-Buayan *facility has provided electricity for the whole village.*

Entrance to turbine room

POST-IMPLEMENTATION & SUSTAINABILITY

Maintenance Fund

For every ampere of current supplied, each household contributes RM 6 (USD 2) to a fund to be used for replacing parts, for community *gotong-royong* activities, and for repair costs. As of November 2010, about RM 1,000 (USD 333) was collected.

Watershed Management

The community has a watershed management plan, and has started to undertake 'enrichment' planting. Kampung Buayan experienced a three-month disruption of electricity supply from February to April 2010 due to an unexpected drought. This experience was a reminder of the importance of watershed management.

Local Community Organisation

With the installation of the micro hydro system, the local community is ready to embark on projects

to improve social and economic development in Kampung Buayan. Many tasks await the community. The most strategic task is to establish and register a local community organisation. Other tasks include the installation of a mill next to the turbine at the power room to increase its usage to process rice and tapioca. The community is yet to finalise its Community Forest Protocol, and yet to connect electricity to the rest of the houses in the Kampung Buayan cluster.

Potential Collaboration

In addition, the community has also received positive response to collaborate with Masdar Institute of Science and Technology to undertake a case study related to improving power management during droughts. This undertaking would be useful for other micro hydro sites. ■

Turbine room

Project 18

COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT IN HULU KADAMAIAN, KOTA BELUD, SABAH

Project Grantee: GOMPITO (Pertubuhan Masyarakat Kampung Kiau Nuluh, Kota Belud/ Kampung Kiau Nuluh Community-Based Organisation)

Project Period: September 2004 to November 2006

Retreat and review of experience among villagers participating in workshop during the project

BACKGROUND

GOMPITO is a *Dusun* indigenous people's community-based organisation (CBO) in Kampung Kiau Nuluh, Sabah. The English translation of the local *Dusun* word GOMPITO is 'Conserving Heritage for Future Generations.' The targeted project site covered Kampung Kiau Nuluh, Kampung Kiau Bersatu and Kampung Gahui, along with several other villages within the Nabalu sub-district of the Kota Belud District. The site is located at the foothills of Mt. Kinabalu, a World Heritage Site.

Before 1995, it was assumed that a part of the village was within the protected area of Kinabalu Park. However, a mapping exercise conducted in 1995 concluded otherwise. This resulted in many Sabahans all over Sabah applying for the land area. Some members of the Kiau Nuluh community also tried to apply for individual land titles. The local communities in the project area have worked on the land for generations. Based on native customary rights, local communities can designate an area as community forest without the need to get a communal title.

PROJECT GOALS

This project was designed to investigate and resolve the issues of conserving natural resources, especially forests, in order to establish a sustainable community-based natural resource management system. It was realised that the absence of such a system would eventually deprive the local Dusun community of communal access to these natural resources.

The project aimed to:

- establish a community forest reserve in Kiau as a community natural resource that is recognised by the government;
- build and strengthen the knowledge and capacity of the local community for biodiversity conservation, natural resource management and sustainable use; and
- formulate strategies for additional income generation from these community natural resource bases, particularly for subsistence needs (fuel wood, medicinal plants, food), attracting scientific research, tourism and recreation.

Community forests

IMPLEMENTATION

Community Mapping

The community forest reserve was informally established through a series of activities and local stakeholder consultation workshops. The most important activity was community mapping to demarcate and identify relevant boundaries. The mapping enabled boundaries to be set, and land-use zones to be created for various uses, such as water catchment areas, culturally-significant areas, and agricultural areas.

Activity Protocol

Workshops were also carried out to involve participation of villages in developing a protocol for activities to be carried out within the community forest reserve. The protocol was accepted, and is self-regulated. During the project, trails into the forest were made, and huts were constructed for the purpose of enforcing the protocol, and also to facilitate access to the community forest for the purpose of research and documentation by the local community. In 2007, GOMPITO, together with Sabah Parks, conducted a scientific research expedition in the community forest area. Based on this study, 15 mammal species, 22 bird species, 19 amphibian species, 3 reptile species and 7 snail and slug species were identified.

Fishing System

The *tagal*[20] system was introduced in three rivers: Tohubang, Tinokok and Kadamaian. This has lead to sustainable fishing methods during the open season, in which the fish harvest is equally shared. Before this system was introduced, villagers adopted various fishing methods, and not all villagers would fish there. With this system, which is monitored by the Tagal Committee, more villagers would benefit.

BENEFITS & ACHIEVEMENTS

Natural Resource Management and Biodiversity Conservation

This project contributed towards building the capacity of GOMPITO and its local community in managing their forest as a natural resource. GOMPITO was able to raise the awareness of the local community on the importance of biodiversity conservation, and provide opportunities to establish cooperation among the local community, government agencies and non-governmental organisations in pursuing biodiversity conservation and sustainable natural resource use and management. Some of the villagers are more conscientious when they clear land for shifting-cultivation, which occurs in a cycle of six or seven years.

Community Forest Reserve

The project was able to offer an alternative approach, and succeeded in nurturing the idea that it was possible for the community to keep the land

20 The *tagal* system is a community-based sustainable fishing practice in which the local community protects and conserves the natural river environment. The word 'tagal' (from the *KadazanDusun* Penampang dialect) means "do not take". Based on this system, fishing is prohibited in certain stretches of rivers to allow fishery resources to replenish naturally. The local community determines the "open season" – the period when this prohibition is lifted – and the bounty is shared among community members.

as a community forest reserve. Prior to the project, there was a rush by local individuals to apply for individual land titles. This was probably due to the fear of uncertainty – if the land was alienated to others.

Conservation of trees in the Community Forest Reserve

Huts used while monitoring the Community Forest Reserve

Community Conserved Area

Sabah Parks has recently commissioned a study to analyse the possibility of creating an ecological linkage between Kinabalu Park and Crocker Range Park, and one of the options considered is the creation of community conserved areas. As the project site is situated in the identified area, the experience of GOMPITO would be very useful towards making this linkage a reality.

POST-IMPLEMENTATION & SUSTAINABILITY

Formal Recognition

Although the community forest area is presently supported by the District Office, it is not officially recognised. One of the reasons is that the community forest area does not have a management structure, such as a board of trustees. There are plans to ensure that the status of the area is elevated from a self-proclaimed community forest reserve to a more formal/legal recognition; for instance, obtaining a communal land title from the government, or gazettement as a nature reserve, or designation as a community forest reserve by the Yang di-Pertua Negeri (head of state).

Continuation Phase

Some of the areas identified as community water catchment areas have been cultivated by a few families in the communities, and there is a need to address and resolve such issues. GOMPITO has received funding from SGP for a continuation phase of about two years. Among some of the activities planned were:

- land use management, and demarcation and zoning of the three villages;
- sustainable management and rehabilitation of forest resources and water catchment areas;
- nursery and heritage garden;
- improving knowledge, skills and capacity of the community in natural resource management; and
- strengthening and continuation of community traditional knowledge of Hulu Kadamaian in the management of nature through *tagal* and *bombon*.[21] ■

21 Similar to *tagal, bombon* is a practice of sustainable fishing. The word 'bombon' comes from the *KadazanDusun* Kota Belud dialect.

Project 19

IMPROVING SUSTAINABLE LIVELIHOOD OF FISHERMEN AND CONSERVATION OF MARINE BIODIVERSITY: REDUCTION OF SEA TURTLE BY-CATCH IN COMMERCIAL FISHERIES IN SANDAKAN, SABAH

Project Grantee: Marine Research Foundation (MRF), Malaysia

Project Period: November 2006 to October 2008

Drowned turtle from a TED-less trawl. Use of TEDs reduce turtle deaths

Photo credit: WWF-Malaysia/Eric Madeja

BACKGROUND

Sabah has a significant trawler industry, and little is known about the impact of the trawler fleet on turtle mortality. The main purpose of turtle excluder devices (TEDs) is to allow turtles that are caught in fishermen's nets to escape. Other advantages to the fishermen are reduction of fuel costs, and increase in value of catches. TEDs have never been used, or experimented, in Sabah. Fisherfolk have the perception that TEDs would reduce the value of their catch and hence their income and livelihood. Unless trials are conducted, the actual impacts would not be fully understood.

The results from this project have the potential to improve the sustainability of livelihood of fishermen who are trawlers by reducing the loss of marine biodiversity, especially of the green turtle (*Chelonia mydas*), listed as "endangered" in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.

PROJECT GOALS

Designed as a pilot project to study the effects of TEDs on catches, by-catch reduction and turtle conservation in the Sandakan area, the project provided opportunities to:

- change perception and build capacity of local fisher folk communities to undertake much more sustainable fishing efforts; and
- investigate the obstacles that might arise in TED use, and to enforce their use in Sabah trawl fisheries.

Stakeholders of this project include the Sabah Department of Fisheries (SDOF) and the Sabah Fishing Boat Owner's Association. Developed in partnership with SDOF, the data provided would assist the Sabah government in determining fishery practices to conserve marine turtles in the future.

IMPLEMENTATION

During this project, the implications of the use of TEDs were explained, and training courses on TED use and installation were conducted with the assistance and expert knowledge of specialists from the US National Marine

Fisheries Service. The first batch of stainless steel TEDs for trials were manufactured in Sandakan.

Trials on trawlers started in July 2007 by comparing catches of a pair of similar trawler vessels – one with, and the other without TED. An independent observer was placed onboard each vessel to record related catch data. A total of 215 trials were carried out using the first batch of prototypes. During these initial trials, it was found that the way the grill was sewn onto the net was incorrect, resulting in twisting of the net, and reduction in overall catch.

In the second round, 155 trials were conducted using lighter TEDs made of aluminium, and manufactured in Kota Kinabalu. The aluminium TED grills were sewn onto the net sleeves to ensure the correct angle and opening and flap dimensions.

Findings & Conclusions from Trials

- Impact of TEDs on catches was negligible, or not statistically significant, for both fish and shrimp. The catch composition did not differ substantially between vessels operating with and without a TED.
- No significant differences were found in shrimp quality and quantity between catches using and not using TEDs.
- There was no marine turtle by-catch on vessels with TEDs compared to four turtles by-catch recorded in vessels operating without TEDs.
- TEDs were effective in avoiding the collection of debris, such as wood, coconuts and even logs. Nets with TEDs recorded only 26 pieces of debris in 23 out of 180 trials. Nets without TEDs recorded 1,148 pieces of debris in 175 out of 190 trials. Reduction of debris translates to reduction in fuel because less power is required to tow the net through the water, potential increase in catch value through reduction in physical damage, and reduction in costs due to net damage, and less downtime for trawling.
- There was no significant variation in fishing behaviour with the use of TEDs, except for the slightly longer trials in vessels operating with TEDs by about eight minutes.

Fisherman in Sandakan inspects a 'clean' catch from net with TED

BENEFITS & ACHIEVEMENTS

Introduction of TEDs

The project – the first of its kind in Sabah – is a first step towards understanding how a TED works, and identifying opportunities for introducing TEDs. This study provided the opportunity to gain know-

how in the manufacture and installation of TEDs, collection of data on catch and by-catch, gathering of views and perceptions from the industry, and analysis of costs, benefits and implications for the next steps to be taken.

Turtle about to escape through blue flap behind TED

Knowledge Exchange

There were also some benefits that were unintended. As it was the first time by-catch studies were conducted in Sabah, independent observers had the opportunity to share aspects of turtle biology with the crew, and likewise, the crew had ample opportunity to share their fishing experience with the observers.

Moored fishing boats at Sandakan

Strategic Alliance

This project was strategic because it became the vital link in the cooperation between SDOF, the fishing community and the research/scientific community. Budding marine researchers from Universiti Malaysia Sabah (UMS) had the opportunity to participate as interns in this project. Subsequently, MRF was also able to obtain co-funding from other sources to support its effort to promote the use of TEDs and other conservation activities in Sabah.

Fishing crew and MRF staff inspect video of net and TED performance after net was retrieved. Instant access to video helped convince fishermen that TEDs work.

POST-IMPLEMENTATION & SUSTAINABILITY

Changing Mindsets

Only one company, Hai Leng Enterprise (HLE), volunteered to participate in the trials. However, HLE did not use TEDs after the trials. Although teething problems were solved during the project, there was still a need to change mindsets and build confidence. Relevant issues needed to be identified

and addressed. This project provided input to the state government in determining fishery practices to conserve marine turtles in the future.

Study Tour

MRF, the project grantee, continued to facilitate and share knowledge and experience in the use of TEDs by organising a study tour to the United States. Participating fishermen and government officers were exposed to the application of TEDs in the US. During a workshop, SDOF stated that they fully support the use of TEDs, and that they would propose to the federal government that it be made mandatory in the future.

Lessons Learnt

The project experience from Sandakan has been replicated in another fishing community project in Kudat, also funded by SGP. Benefits and lessons learnt (such as sewing of the grill to ensure that the net does not twist underwater) from the Sandakan project were passed on to the Kudat project. A video was produced by MRF for the Kudat project to show how TEDs function underwater. ■

Over 5,000 such net catches are pulled up in Sabah every day, and all have the potential to kill sea turtles if TEDs are not employed.

Relatively 'clean' catch with few large debris. Reduction of debris results in better quality catch and reduced fuel consumption.

Project 20

SEMPORNA: CONSERVING MARINE BIODIVERSITY THROUGH CAPACITY BUILDING

Project Grantee: WWF-Malaysia (Sabah)

Project Period: November 2004 to January 2007

Solar panel installed during project

BACKGROUND

Semporna is a Priority Conservation Area in the Sulu-Sulawesi Marine Ecoregion because of its high diversity of coral species and coral types, and high marine productivity. These important features were highly threatened by over-fishing, destructive fishing, unplanned and unregulated marine ecotourism. This project was developed as part of the sustaining project activities related to the Semporna Islands Project (SIP 1999-2001), which was a collaboration between Sabah Parks, Marine Conservation Society, World Wide Fund for Nature (WWF)-Malaysia, and Nature Link, and which was funded by the European Union.

PROJECT GOALS

This project aimed to promote and achieve effective conservation and sustainable use of biodiversity of critical marine habitats (coral reefs, mangroves, fishing grounds, etc.) in Semporna through enhancement of the community's capability in sustainable resource use and management. The emphasis of this project included:

- awareness raising on the importance of sustainable use of depleting resources; and
- capacity building to enable the community to manage their resources more sustainably and efficiently.

IMPLEMENTATION

Adaptive Project Management

Initially, the project planned to assist in giant clam aquaculture. Later, the project was changed to develop and publish a seaweed manual as a tool to promote alternative livelihood. Seaweed culture was later identified as

a more viable and suitable option for generating alternative income. This is an example in which the SGP office and project grantee were able to adapt to the changes during the implementation period. Four main activities were carried out.

Capacity building starting young: School children reading about marine conservation in Resource Room

Publication of Manual

The *Seaweed Culture Manual: Code of Practice for Seaweed Culture in Sabah* (SCM) was jointly published by WWF-Malaysia and the Sabah Department of Fisheries (SDOF). The SCM is a guide for the culture of seaweed in Sabah, and also incorporates the *Code of Practice for Aquaculture in Sabah* that was prepared by SDOF. The manual is available in two languages: Bahasa Malaysia (national language) and Bajau.

Close-up of solar panel

Renewable Energy System

Two solar-hybrid systems (SHS) were installed in two schools: Mabul Primary School and Selakan Primary School. The project demonstrated that renewable energy could be used to power information technology (IT) applications for the IT centres (IT Corners). New computers bought by the government were powered by SHS, which was a safer and cleaner option to diesel power generators. This eliminated the risk of computers being damaged by the fluctuating power supply from these generators. The SHS was able to supply power to the satellite dish and telephone line installed by a telecommunications company (Telekom Malaysia).

Awareness Raising

IT Corners were established in schools in Mabul and Selakan. These centres were used to host workshops and activities to raise awareness of biodiversity conservation and sustainable use of natural resources. The solar-powered facility allowed teachers and students to access, in digital format (diskette), among others, the teaching module for marine conservation that was prepared by the Department of Education (DOE) for primary students.

Natural Resource Management

Capacity-building workshops on natural resources management were conducted for teachers, students and communities. WWF-Malaysia adapted the Marine Education Kit for the activities of this project. This kit was used to prepare presentation materials for the IT Corners to complement the teaching aids produced by the DOE. Various outreach and communication materials were also developed.

BENEFITS & ACHIEVEMENTS

Standard Reference Manual

Based on discussions with SDOF, the SCM has become the standard operating procedure and a handy reference manual for those interested in undertaking seaweed culture. In addition to the Semporna area, the manual was also distributed to coastal districts where there was a potential for seaweed culture, such as Lahad Datu, Kunak, Tawau and Kudat. The SCM is out of print, and SDOF intends to develop a revised edition.

Solar Power

Based on findings during a visit to Mabul Island in February 2011, the SHS was still used. However, the performance of its batteries had deteriorated. The experience of SHS use in Mabul Island may have also contributed to more solar cells being installed on the roof of the school as part of electricity supply to rural schools.

Solar panel (above roof) installed by government

Academic Enrichment

The IT Corner at Mabul Primary School is jointly used as an enrichment centre for students who need coaching and additional assistance in their studies.

POST-IMPLEMENTATION & SUSTAINABILITY

In terms of sustainability for WWF-Malaysia as a project grantee, the overall experience of collaboration among stakeholders during the project provided a good foundation for future conservation work for WWF-Malaysia in the islands around the District of Semporna. WWF-Malaysia was able to secure funding to continue some of its awareness and education activities beyond the completion of this project funded by SGP. In addition, WWF-Malaysia is implementing a project to support ecosystem-based management in Semporna, and is involved in organising the annual Mabul Marine Week. ■

Section 3: Impacts and Continuity

IMPACTS

SUSTAINABILITY

All the projects addressed issues of environmental sustainability. These issues are wide-ranging, and covered conservation of biodiversity and natural resource management in terrestrial and marine environments, as well as sustainable production and consumption.

Improved Natural Resource Management

In general, projects that focused on natural resource management resulted in improvements in management. For instance, due to the AZAM project, conservation efforts to protect the mangroves in the Sematan area were increased, and encroachment was reduced. The efforts to rehabilitate mangroves, and the success of the river and sea surveillance programme carried out by PIFWA in the CAP project resulted in a positive outcome – increased monthly income – for the local fishermen. Similar efforts were also made by SSN in Sungai Nenggiri where the river is regularly patrolled to reduce threats of illegal fishing, encroachment and pollution.

Clean Energy

The micro hydro projects by IPIMAS and TONIBUNG resulted in improvements in watershed management, and ensured that local communities are able to harness clean energy from local streams. Access to clean energy has resulted in improving the quality of life and upliftment of the local community. GOMPITO's project contributed towards the formation of a community forest reserve that is managed sustainably by its local community members.

Fisherman with terubok *catch*

Marine Environment

Two projects contributed towards improving the marine environment. The project on turtle excluder devices (TEDs) was the first of its kind. With respect to marine ecosystems, the MRF project that studied the effects of TEDs in the fishing industry provided an understanding of how these devices work. This knowledge paved the way for opportunities to introduce TEDs. The awareness raised by the MEKAR project in turtle conservation has changed public perception and habits on the collection, sale and consumption of turtle eggs.

Targeting Urban Communities

The projects by CETDEM and TrEES were targeted at changing mindsets and behaviours of urban communities. By participating in the energy-use audits in the CETDEM project, households were able to understand their consumption patterns and environmental impacts. This enabled them to make informed decisions towards reducing their ecological footprints. The TrEES project transformed an initial recycling centre into a community focus point – an interpretative one-stop centre to serve urban dwellers, and focused on disseminating information and knowledge on biodiversity and sustainable living.

ALTERNATIVE LIVELIHOOD

Sustainable Alternatives

Several projects – including those by MNS, SSN, SABOT and WI – promoted ecotourism as an alternative livelihood. In addition to ecotourism, the projects by WIJADI and IDS also explored the option of processing essential oils from medicinal plants as avenues for alternative income generation. SDI's project in Daro, Sarawak, addressed the need to reduce the fishing communities' dependence on *terubok* fishing by encouraging them to adopt alternative livelihoods. AZAM's project encouraged local communities to improve income generation through sustainable livelihoods by promoting alternatives to reduce pressure on its mangroves such as captured fisheries, soft-shell crab culture, traditional food cottage and downstream fishery products.

Empowerment

Projects with elements of an alternative livelihood managed to impart new knowledge and skills, as well as to build confidence, of participating community members so that they were able to benefit from local natural resources. Such projects involved a series of training workshops and study visits to learn from other communities. Participants were exposed to opportunities and possibilities they had not considered before. For instance, based

on the MNS project with the *Semai* community, capacity building in skills such as report writing, bookkeeping and organising meetings were also necessary.

Vigilance & Maintenance

Appreciating that ecotourism would depend on local resources, such as mangroves, wetlands and forests, local communities realised that they play a vital role in the protection and conservation of such resources. For instance, local communities in the Sedili wetlands are more vigilant on the clearing of riverine vegetation, river reserves (i.e., more land cleared for oil palm plantation) and upstream pollution from nearby oil palm plantations and mills, and have reported such problems to the district authorities. Similarly, SEMAI – a CBO that the MNS project helped to form in Ulu Groh – prevented a private company from logging the area where their village and ecotourism site was located.

REPLICABILITY

Replicable Benefits

Based on the benefits and lessons learnt, there is potential for other CBOs to replicate and improve on these projects in other parts of Malaysia. Many participants at the brainstorming and lesson sharing session[22] on these 20 projects stated that they had benefited from the outcomes of their projects. These 20 project activities have made available a wealth of knowledge and experience that could be learnt and shared.

Ecotourism projects require pristine environment to be managed and conserved

Support Centres

Many participants at the brainstorming and lesson sharing session were inspired, and some looked forward to trying out different approaches to solve similar issues, or different issues with similar contexts. They said that there is a need to provide opportunities for NGOs and CBOs to network and share know-how on project implementation and management. One of their suggestions was to upgrade successful projects into learning centres so that other organisations and communities could learn from such projects. This indicates that to promote replication, there is a need for a support mechanism or platform for continuous improvement, and a facility to enable networking and sharing of past, present and future SGP project grantees.

State Agency Support

Government buy-in is also important to ensure replicability. As a stakeholder, some government authorities assisted communities during or after the SGP project funding. In the AZAM project

22 The workshop *Sharing of Experiences of SGP Projects and Brainstorming on Sustainability After Project Implementation* was held on 18-19 April 2011.

in Sematan, public amenities, such as electricity were provided to villages, and access roads to villages and small remote towns were built. This led to further new infrastructure development that benefited the socio-economics of the community. In some cases, projects and ideas were upscaled by government authorities on seeing the benefits that the SGP projects provided the local communities. In Sematan, about RM 2.5 million (USD 833,333) was provided by the Sarawak government for the pen-culture project.

Government Development Plan

The herbal and medicinal garden concept from the IDS project in Kota Kinabalu was replicated by other government agencies, such as the Departments of Agriculture and Forestry, and then later by PACOS, a CBO. The government took notice of the benefits of this project, and helped SDI to upscale the commercialisation of medicinal plant species with two grants – each worth RM 250,000 (USD 83,333) – from the Ministry of Science, Technology and Innovation (MOSTI). Laboratory facilities were established for the testing and processing of essential oils and medicinal products. This is a good showcase of a pilot project that provided an opportunity for the government to increase its involvement and provide leadership to implement its development plans. For such projects, a platform needs to be created during or after the project to engage potential funders, including the government.

Policy Changes

Some SGP projects led to policy shifts in the sustainable management of natural resources by the introduction of new legislation, such as the *'No Terubok Fishing Season'* in Daro, Sarawak; the establishment of green lungs for urban communities, such as Taman Botani in Kota Damansara; and recycling centres associated with hypermarkets as promoted by the Ministry of Housing and Local Government. The project implemented by TrEES had a multiplier effect when the Department of Housing and Local Government created an enabling environment for hypermarkets and supermarkets to have recycling and active 'green' centres next to their outlets.

EMPOWERING RURAL COMMUNITIES

Capacity Building

In the many interviews that were conducted with project implementers, the single most important aspect that emerged was that capacity building was the most enriching experience. Various types of capacity building activities were tailored to the needs of the projects in order to empower CBOs and indigenous communities to address the challenges they faced.

Natural Resource Management

Through these projects, rural communities were able to manage natural resources in a more

sustainable manner. This includes replanting and rehabilitation of forests and mangroves (projects by AZAM, CAP, SSN and WI), introduction of *tagal* (GOMPITO), and monitoring and patrolling (CAP, SSN and WI) to reduce encroachment or illegal activities.

System Maintenance

The two community-based micro hydro projects (by IPIMAS and TONIBUNG) ensured that local communities were able to maintain and support the systems, as well as manage and protect their watersheds. Local communities were also empowered with options for alternative livelihood as mentioned in the previous section.

BALANCING & IMPROVING GENDER ROLES & PARTICIPATION

Alternative Income Generation

Although projects covered in *Partners in Sustainable Development* did not specifically tackle gender issues, some projects managed to address gender concerns. The project by WIJADI was in line with its objective as a CBO that assists and uplifts the lives of single mothers by providing welfare benefits, by teaching them about their marital and legal rights on divorce, and by empowering women to engage in alternative income-generation activities. In this project, its members were trained in simple organic farming techniques, and basic information on herbal plants of medicinal values.

Deployment of turtle excluder device during project implementation

Building Confidence

In CAP's project, it was realised there was little involvement from women during its first phase. This was overcome during the second phase as more efforts were made to raise awareness, build trust and confidence in the women so that they are not dissuaded from participating. Subsequently, the fisherfolk community leaders understood and appreciated the need for the active participation of women in the project.

Promoting Leadership

Projects with elements of alternative livelihood also recognised the role of women in the local community. In SABOT's project in Tasek Bera, the role and contributions of women within the *Semelai* community in handicraft making was recognised. Hence, their capacity and leadership skills were enhanced during the project by promoting leadership and participation in handicrafts as an alternative.

Gender Balance

There was also no shortage of women participation in community-based activities. In the micro hydro project by IPIMAS at Mudung Abun, the physical work was carried out by men, women, youth and children – each according to their capacity.

Similarly, in the organisational structure of SEMAI, its committee consists of 12 members with an equal number of both genders from the three villages that comprise Kampung Ulu Groh. This structure provided an effective platform to increase cooperation among members of the three villages, including balanced roles for both genders.

CONTINUITY

In general, the completion of these projects does not mean that all activities have come to a halt. The two main factors that influenced the continuation of efforts by project grantees were identified as i) determination to continue, and ii) ability to source for funds.

DETERMINATION TO CONTINUE

The main driving force of CBOs to continue project activities after project completion is characterised by their determination to achieve the goals of their projects. Based on the review of the 20 projects in *Partners in Sustainable Development*, three main conditions are necessary for CBOs to sustain its determination: management structure, community benefit, and effective leadership.

Management Structure: Most project grantees and their participating CBOs have established or officially registered an organisation, with a committee or management arrangement in place. This structure maintains the interest and momentum of activities. The management structure also provides guidance for good governance and accountability.

Community Benefit: When local communities, especially members of the organisation within the community, are able to benefit from the activities that are carried out, they are more inclined to continue to participate in project activities and continue practices that were introduced. The prime examples are the benefits of the community-based micro hydro projects.

Effective Leadership: All projects require a dedicated and able leader to guide participants and the community in overcoming various obstacles and challenges. Such a leader is expected to bring members of the community together, and make the difference through project intervention that benefits the community as a whole with the available funds. The level of commitment and sincerity of the leader is essential for the success of the SGP project.

ABILITY TO SOURCE FOR FUNDS

The continuation of related project activities require financial resources. Some of the projects succeeded in attracting funds from SGP for continuing phases, while some managed to obtain funding from other sources.

Continued Funding

Project grantees would try whatever means possible to find the funds needed: from organising fundraising dinners, to introducing schemes to finance continuing project activities. For example, in TONIBUNG's project in Kampung Buayan, Sabah, villagers who benefitted from the micro hydro project contribute every month to ensure that a fund is available for its maintenance. In Kampung Teba'ang in Daro, Sarawak, the community benefited from a microcredit scheme in which the money was used to buy only equipment and materials to support the alternative livelihood activities. Each participant paid back the small loan soon after profits were generated through the activity undertaken, such as carpentry, iron masonry, aquaculture and cash-crop planting.

Goal Alignment

Project grantees need to be creative to attract funding from private, institutional and development organisations. In the process of fundraising, project grantees need to present or align the goals of their project to the requirements of the funder. Some projects were able to receive funding from the government because they had the potential to be scaled up in line with the development programme of government policies and objectives.

Conservation of natural resources is part of sustainable development

Documentation & Dissemination

In the process of applying for funds, it is important to document and disseminate the achievements and benefits of the project in order to attract more funding or support. During the brainstorming and sharing workshop with project grantees, it was noted that the information was documented and reported. ■

Glossary

Amanah Ikhtiar Malaysia	Malaysia's largest microcredit organisation. AIM is the 'Trust Initiative of Malaysia'.
Angkatan Zaman Mansang	A non-profit, non-governmental organisation which seeks to facilitate development efforts in Sarawak by promoting development communication. Angkatan Zaman Mansang (or AZAM) means 'Movement for Progress'.
Biodiversity	The 1992 United Nations Earth Summit in Rio de Janeiro defined biodiversity (or biological diversity) as the "variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems".
Bombon	A practice of sustainable fishing. The word 'bombon' comes from the *KadazanDusun* Kota Belud dialect.
CBNRM	Community-Based Natural Resource Management
CBO	Community-based organisation
CETDEM	Centre for Environment, Technology and Development, Malaysia
'Clean' electricity	Electricity generated from natural sources, such as solar, wind, wave, geothermal and tidal power
Coral Triangle Initiative	The CTI on Coral Reefs, Fisheries and Food Security was launched in 2007 as a six-country programme of regional cooperation to protect the outstanding coastal and marine resources of the CT region. The six countries are Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor Leste.
CSO	Civil society organisation
ECOFARE	Foundation for Agriculture, Environment and Education
GEF	The Global Environment Facility, an independent financial organisation, provides grants to developing countries for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. Through its Small Grants Programme (SGP), the GEF has given grants directly to non-governmental and community organisations.
Global Diversity Foundation	The GDF is a family of organisations and regional initiatives that promote agricultural, biological and cultural diversity around the world through research, training and social action.
GOMPITO	Community-Based Organisation of Kiau Nuluh Village, Sabah. GOMPITO means 'Conserving Heritage for Future Generations'
Gotong-royong	A phrase in the national language which means 'cooperation towards a shared goal'.
IDS	Institute for Development Studies, Sabah
IPIMAS	Indigenous People's Institute Malaysia Sarawak
IPO	Indigenous people's organisation
IUCN	The International Union for Conservation of Nature is the world's oldest and largest global environmental network. The IUCN helps the world find pragmatic solutions to the most pressing environment and development challenges.
Kampung	'Village' in the national language
KESEDAR	An acronym for the South Kelantan Development Board
Local Agenda 21	A subset of Agenda 21 that was created by the United Nations after the Earth Summit of 1992. Agenda 21 works towards creating sustainable development.
MEKAR	Ma' Daerah Community Conservation Association
Micro hydro	Micro hydro is a term used for hydroelectric power installations that typically produce up to 100 kilowatts of electricity.
MNS	Malaysian Nature Society

MRF	Marine Research Foundation, Malaysia
NGO	Non-governmental organisation
PACOS Trust	Partners of Community Organisations is a community-based voluntary organisation that helps raise the quality of life of indigenous communities.
PERHILITAN	A national language acronym for the Department of Wildlife and National Parks Peninsular Malaysia
PIFWA	Penang Inshore Fishermen Welfare Association
Ramsar Convention	An international treaty for the conservation and sustainable utilisation of wetlands. It is also known as the Convention on Wetlands of International Importance, and is named after the town of Ramsar in Iran.
RAS 9	Residents' Association of Section 9, Kota Damansara
Red List	The IUCN Red List of Threatened Species is widely recognised as the most comprehensive, objective global approach for evaluating the conservation status of plant and animal species.
SABOT	Semelai Association for Boating and Tourism
SDI	Sarawak Development Institute
Semai	Indigenous people
SGP	The Small Grants Programme works with communities around the world to combat the most critical environmental problems. SGP is funded by the Global Environment Facility, whose mission is the protection of the global environment.
SGP PTF	The Small Grants Programme for Operations to Promote Tropical Forests is a regional initiative to focus specifically on helping indigenous people. The SGP PTF was set up through a partnership between the European Commission (EC) and the United Nations Development Programme (UNDP).
SSN	Friends of Nenggiri River *(Sahabat Sungai Nenggiri)*
Tagal	The *tagal* system is a practice of sustainable fishing. The word 'tagal' comes from the *KadazanDusun* Penampang dialect.
TONIBUNG	Community-based organisation in Sabah. TONIBUNG means 'Friends of Village Development'
TrEES	*Treat Every Environment Special* is a non-profit environment organisation.
UNDP	The United Nations Development Programme is the global development network of the United Nations, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life.
USM	Abbreviation in the national language for the Science University of Malaysia
WI	Wetlands International
WIJADI	Stands for *Wanita Inovatif Jayadiri* or 'Empowered Innovative Women'
WWF	World Wide Fund for Nature, formerly called World Wildlife Fund

SGP The GEF Small Grants Programme

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