



FINAL REPORT

Inle Lake Conservation and Rehabilitation Project



NORWEGIAN MINISTRY
OF FOREIGN AFFAIRS

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A. BACKGROUND

Located in Nyaung Shwe Township, Shan State, Inle Lake is the second largest freshwater lake in Myanmar. The Lake covers a total area of 489,721 hectares and is home to 267 species of birds and 43 species of freshwater fishes, otters and turtles. Diverse flora and fauna species are recorded to be found, and the Lake is reported to be the nesting place for the globally endangered Sarus Crane (*Grus antigone*). In addition to its ecological importance, Inle Lake is also unique for the way the local inhabitants have adapted their lifestyle to their environment. Farmers from one of the dominant ethnic groups in the region, the Intha people, practice floating island agriculture, locally called "yechan". Inle Lake and its watershed provides several ecosystem services on which local people depend. It is an area of cultural significance where century-old civilizations flourished.

Inle Lake is a popular tourist destination not only in Myanmar, but also in the Asia-Pacific Region), attracting both local and international tourists year-round. It is also the main water source for the Law Pi Ta Hydroelectricity Power Plant and facilitates markets for agriculture and the manufacture of silk, lotus and silver products. Because of its high biodiversity and wetland ecosystem, the Lake also has significant environmental value. It is recognized as an Association of Southeast Asian Nations (ASEAN) Heritage Park and was declared a UNESCO Biosphere Reserve in June 2015.

The Inle Lake ecosystem is deteriorating at an alarmingly high rate and is further impacted by degradation of the surrounding watershed areas, expansion of agriculture (floating gardens), excessive use of chemical fertilizers, pollution and run-off from human settlements and tourism operations, and the introduction of invasive alien species to the Lake. All these have had a cumulative negative effect on the Lake, degrading the quality and integrity of the ecosystem. Realizing the threat to the sustainability of the Lake and the urgent need to act towards conservation of the Lake and its surrounding watershed areas, the then Ministry of Environmental Conservation and Forestry (MOECAF) took the lead in developing projects in line with its Five-Year Action Plan for Environmental Conservation and Sustainable Management of Inle Lake (2010/11 to 2014/2015). In line with this Action Plan, UNDP proposed implementation of the Inle Lake Conservation and Rehabilitation Project.

MOECAF and UNDP, with financial support from the Government of Norway, and in partnership with the United Nations Educational Scientific and Cultural Organization (UNESCO), launched the Inle Lake Conservation and Rehabilitation Project in 2012. The project aimed to restore the environmental stability of the Lake and improve the quality of life of local communities through the implementation of environmental conservation and environmentally friendly community development activities. The project was designed so that 9500 households in 71 villages in the remote, buffer and core zones of the Kalaw Chaung Watershed area would benefit from environmental conservation practices in Kalaw, Pindaya and Nyaung Shwe Townships.

The project was initially anticipated to run for two years (January 2012- June 2014). However, due to various reasons the implementation of the project was delayed, and to fully utilize funds and complete planned activities, the project applied for and received two no-cost extensions (June 2014 – July 2016).



From January 2012 till December 2014, the project was implemented to meet the following objectives:

- Output 1: Technical Assessment Report for the Preparation of a Conservation and Management Plan for Inle Lake Completed
- Output 2: Small Grant Facility for CBOs and NGOs Established to Form a Trust Fund for Implementation of Environmental Activities
- Output 3: Knowledge Sharing Platform Established and Information Disseminated Among Relevant Stakeholders
- Output 4: Environmental Activities Mainstreamed into National and Regional Development Plans

The external mid-term evaluation of the project that was conducted in 2013 recommended revision to the original project outputs to ensure that tangible results could be achieved during the project life cycle. Subsequently in September 2014, the decision was taken by the Steering Committee to revise the project outputs. Thus, the project was granted a no-cost extension by the Government of Norway with a revised strategic objective of strengthening institutions for Inle Lake Management and for the improvement of the quality of life of the local community.

From January 2015 to July 2016 the project implemented activities towards achievement of the following objectives:

- Output 1: Nomination Dossier for Inle Lake as a Biosphere Reserve re-submitted by the Government of Myanmar
- Output 2: Terms of Reference for Inle Lake Management Mechanism Established
- Output 3: Knowledge of National and Local Stakeholders Enhanced for Maintaining Inle Lake as a Biosphere Reserve Enhanced

Upon completion of the project activities in June 2016, an external evaluation assessed the relevance, effectiveness, efficiency and level of sustainability of the Inle Lake Conservation and Rehabilitation Project. The evaluation documented lessons learned, successes and challenges from the Project; and outlined recommendations for future environmental conservation initiatives that can be linked with community development activities in the Inle Lake region.

B. PROJECT PROGRESS: ACTIVITIES AND RESULTS

Conservation efforts under this project hinged on key outputs, completion of which would ensure that the project realized its primary objectives. Activities included: technical assessment for preparation of a conservation and management plan for Inle Lake; submission of a nomination dossier for Inle Lake as a biosphere reserve, establishment of small grant facilities to support local restoration and conservation activities; establishment of knowledge sharing platforms; mainstreaming restoration and conservation efforts into regional and national development plan; and the establishment of a terms of reference for an Inle Lake management mechanism.

- Output 1: Technical Assessment Report for the Preparation of a Conservation and Management Plan for Inle Lake Completed
- Revised Output 1: Nomination Dossier for Inle Lake as a Biosphere Reserve Re-submitted by the Government of Myanmar

UNDP's partnership with UNESCO was key in ensuring the completion of this project area as UNESCO took the lead in the technical assessments of Inle Lake. UNESCO was instrumental in generating the baseline data; a process which included documenting the rich flora and fauna of the lake ecosystem, detailing the biological characteristics of the Lake (main habitat and land cover types, the natural processes, and main human impacts in the region), and the zonation of the Lake for biosphere reserve nomination using geographic information systems (GIS) techniques in line with the guidelines of UNESCO's Man and Biosphere (MAB) Programme. A land use change map created by the project contributed to greater understanding of the changes that occurred in the biosphere area over a 10-year period from 2000 to 2010. This also resulted in the development of land use plans by 23 villages, with prioritized conservation activities identified.

The baseline assessment also established much needed documentation of key data for future monitoring purposes. Furthermore, the information gathered from the baseline assessment would also enable systematic and informed interventions for any future environmental conservation, biodiversity preservation and sustainable development efforts at the Lake.

Salient features of Inle Lake Biosphere Reserve from the Nomination Dossier include:

- Total area of the proposed biosphere reserve is 489.721 ha, with core area(s): 2054 ha, buffer zone(s): 125,602 ha, and transition area(s): 362,065 ha
- Flora and fauna species are diverse. The Lake is the nesting place of globally endangered Sarus crane (*Grus antigone*) and home to 267 species of birds, of which 82 are wetland birds.
- There are 43 fishes recorded; 16 species are endemic to Inle Lake, of which 12 species belong to the Cyprinidae family.

THE UNESCO MAB PROGRAMME

Established in 1971, the MAB Programme is an intergovernmental scientific programme that aims to establish a scientific basis for the improvement of relationships between people and their environments. MAB combines the natural and social sciences, economics and education to improve human livelihoods and the equitable sharing of benefits, and to safeguard natural and managed ecosystems. The Programme promotes innovative approaches to economic development that are socially and culturally appropriate, and most importantly, environmentally sustainable. Its World Network of Biosphere Reserves currently counts 669 sites in 120 countries all over the world, including 16 transboundary sites. Countries seeking to include potential sites as biosphere reserves must go through a nomination and approval process by the International Co-ordinating Council (ICC) of the MAB Programme.

- Among the 16 endemic fish species, Inle Carp (*Cyprinus carpio intha*) locally known as *nga-phein* is culturally symbolic and important for consumption and household income.
- 10 reptiles, 3 turtles, 9 mammals, 75 butterflies, 20 species of snails, as well as 527 species of medicinal plants, 184 species of orchids, 292 species of Angiosperms (Monocot), and 1320 species of Angiosperms (Dicot) have been identified.
- Inle Lake is on both the Central Asian and East Asian Australasian Flyways of the migratory birds. A network of sites along flying routes is essential for the migratory water birds as they need a chain of protected feeding and resting areas to enable them to travel from the northern breeding ground to the southern non-breeding areas.
- Many pagodas and stupas that have been built on or near the Lake over the last millennia. Phaung Taw Oo and Ah Lo Taw Pauk Pagodas date back 800 years. Stone inscriptions at Shwe Indainn Pagoda and Than Daung Pagoda (1785 AD) indicate links to Bagan cultural heritage and style, and high cultural and heritage value.
- Important habitat types represented in Inle Lake are wetlands and forest habitat. Different forests types are found in the catchment of Inle Lake: pine forests, dry indaing forests and hill deciduous forests.
- Inle Lake lies in Nyaung Shwe Township which covers 36 village tracts comprising 446 villages, including the town of Nyaung Shwe. The population of these 36 village tracts is estimated at 172,469 people in 32,139 households. The population of the entire watershed is approximately 890,000.
- Intha fishermen are famous for their unique leg-rowing style, which enables them to see fish from a greater height, and leaves their hands free to manage the fishing net. They have an affinity with the endemic Intha carp species, which is their prime catch species and regarded as having special value in their culture.
- Other types of livelihoods are blacksmithing, goldsmith, weaving, and tourism. Traditional weaving is both for local and commercial markets. Cloth weaving from lotus, locally called 'kyar thingan', is a unique product of Inle Lake.
- Intha farmers practice one of the most famous types of agriculture in the world: floating island agriculture. Locally this is known as 'yechan', a form of hydroponic farming. Local farmers grow vegetables, especially tomatoes, and fruit on the floating islands.
- While there is a total of 29 streams in the watershed flowing into the Lake, Inle Lake receives most of its run-off from 4 major sub-catchments containing 12 streams: Nanlet, Negya (Yei Pei), Kalaw (Thann Daung), and Balu (Indein).



The assessment concluded that the extensive complex of species and ecosystems within the Inle Lake bioregions and landscapes spans a full spectrum of human intervention. This provides an opportunity to create a model of global importance for promoting and demonstrating a sound balance between socio-cultural diversity and sustaining the Biosphere Reserve

HIGHLIGHTS OF THE NOMINATION PROCESS

September 2013:

Nomination dossier submitted to the UNESCO MAB Secretariat

March 2014:

Technical approval of Myanmar's dossier by the 20th meeting of the International Advisory Committee for Biosphere Reserves (IACBR) at UNESCO Headquarters, Paris.

June 2014:

Deferment of nomination of the proposed Inle Lake Biosphere Reserve.

September 2014:

Revised nomination dossier submitted to the UNESCO MAB Secretariat

February 2015:

Myanmar's nomination dossier technically approved by the 21st meeting of the International Advisory Committee for Biosphere Reserves at UNESCO Headquarters, Paris

June 2015:

Designation of Inle Lake as a biosphere reserve approved by 34 Member States of the MAB ICC during the 27th Session of the MAB International Coordinating Council

A key result of this activity area was the preparation and submission of the Inle Lake Nomination Dossier to UNESCO's Man and Biosphere Programme (MAB). This process required submission of a 'nomination dossier' (supporting documentation) for consideration.

The preparation and submission of the dossier was successfully completed by the MOECAF in 2014. Although it was favorably received and technically approved by the International Advisory Committee for Biosphere Reserves (IACBR), Myanmar's nomination was deferred in March 2014. The Council noted with concern, the significant human population in the core area proposed, and strongly encouraged the authorities to resubmit the proposal in accordance with its recommendations.

From July to August 2014, UNESCO worked with Myanmar authorities to prepare a revised zonation scheme that addressed the ICC observations, one which clearly indicating areas protected by customary or formal law. The revised proposal submitted to the IACBR was based on the following zonation framework:

- The reserve would be a legally protected redefined core zone with high value for biodiversity conservation under the Protection of Wildlife and Protected Areas Law (1994) and Protection of Wildlife and Protected Areas Rule (2002).
- There would be no development activities in this zone. This zone will be used for long-term conservation of biological diversity, monitoring, research, awareness education, and other low-impact activities. Only very restricted tourist activities such as bird watching, if any, will be allowed in this area.
- The buffer zone would be expanded to include ecologically-sound and cooperative activities, including environmental education, recreation, eco-tourism, and research.
- The areal extent of the transition zone would remain the same and include agricultural activities, watershed conservation, settlement and other relevant activities; and local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and other stakeholders would work together to manage and develop the area's resources in a sustainable and participatory manner.

UNESCO provided technical support to ensure that senior officials from MOECAF could participate in and contribute to the 27th Session of the Man and the Biosphere International Coordinating Council meeting held from 8-12 June 2015 at the UNESCO Headquarters in Paris, France. It was during this meeting that Myanmar's nomination was successfully approved for Inle Lake to be designated a biosphere reserve. Subsequently, Myanmar joined the World Network of Biosphere Reserves (WNBR).

The participation of senior officials from MOECAF in pursuing the nomination signaled the government's strong ownership and leadership of the process. Furthermore, the designation of Inle Lake as a biosphere reserve enabled stakeholders to recognize the need for promoting a range of solutions to preserve the Lake including responsible waste management, sustainable agricultural methods such as organic model-farms, regular dredging to remove sediment, effective management of check-dams, management of the upstream areas in the long-term, and ensuring sustainable fishing and transportation activities on the Lake.

UNESCO's contribution and technical assistance throughout this process contributed to improved awareness among communities, media and the public which supported MOECAF's efforts in successfully achieving nomination of Inle Lake as a Biosphere Reserve. Long-term plans for monitoring and management of the Lake were developed and presented as part of the nomination dossier; and the establishment of the Man and the Biosphere (MAB) National Committee for Myanmar was an important step towards institutionalizing an effective management and coordination mechanism for Inle Lake and subsequent Biosphere Reserves in Myanmar.

At the time of its establishment, the committee was chaired by the MOCAF Minister and comprised of 14 senior ministers. Under the MAB National Committee, two working groups were established to support the National Committee: the National Technical Working Group and the Stakeholder Engagement Working Group.

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CONSERVATION WINS BIG

Inle Lake becomes Myanmar's first UNESCO Biosphere Reserve

MYANMAR has opened a new chapter in its commitment to biodiversity and ecosystem conservation after the United Nations Educational, Scientific and Cultural Organization (UNESCO) Biosphere Reserve at Inle Lake on 4 December.

Myanmar's first Biosphere Reserve was awarded UNESCO's Man and the Biosphere (MAB) programme at the 27th Session of the MAB International Coordinating Council (ICC) held in Phnom Penh, Cambodia, on 2–6 June 2013.

UNESCO has worked closely with the Ministry of Environment and Environmental Conservation and Forestry (MoECF) to provide technical support to the government of Myanmar in its efforts to protect the lake in collaboration with UNDP and with generous financial support from the Government of Norway under the framework of the Inle Lake Conservation and Rehabilitation Project.

In the opening remarks at the ceremony, U Aye Myint Maung, Deputy Minister of the Ministry of Environmental Conservation and Forestry, said: "The Inle Lake Biosphere Reserve has 'opened a new chapter in our endeavour, demonstrating the importance of conserving biodiversity and ecosystems services in the context of sustainable development.'

Mr. Ann Chiaro, Norway's ambassador to Myanmar, congratulated the lake communities

A fisherman prepares his fishing net while rowing with his leg on Inle Lake, which has been named Myanmar's first UNESCO Biosphere Reserve.

and stakeholders on this landmark achievement and stressed the importance of environmental protection.

He added: "In the future, the Inle Lake Biosphere Reserve will work with the local communities for environmental sustainability, a subject which has received much attention from the government and multiple political parties."

Mr. Sathya Shan, Director of UNESCO's Regional Science Bureau for Asia and the Pacific, underscored the importance of biodiversity preservation and sustainable development. Addressing the

incentive technical and socio-economic solutions, which are key to preserving the lake, he said: "Working with the local communities through an inclusive management framework for the lake...

See page 3 >



- Output 2: Small Grant Facility for CBOs and NGOs Established to Form a Trust Fund for Implementation of Environmental Activities**

As part of the project, UNDP was able to provide small grants to community-based organizations (CBOs) for the implementation of various lake rehabilitation activities. A secondary objective was to improve the capacity of local organizations in project management including financial management, administration, and coordination and collaboration with government and development organizations, so that once the Inle Lake Conservation Trust became operational, local communities would be better able to mobilize and manage funding for conservation activities. Grants were provided to support activities in the agriculture, soil and water conservation, environmental conservation and forestry, and socio-economic sectors.



Figure 1: Collection of water hyacinth for organic farming

In the agriculture sector, organic farming practices were applied on approximately 54 acres of agricultural land and 12 demonstration sites were established. Local farmers were also supported to create the link between organic agricultural products (supply) and markets (demand) with requisite training delivered to 40 trainees (14 females, 26 male) in Nyaung Shwe Township. To manage water hyacinth growth on the Lake, the project provided cutters to seven villages: Nwar Da Ma South, Nwar Da Ma North, Kyun Gyi North, Kyun Gyi South, Ya Mae Pin, Myay Ni Gone, Nga Phae Chaung. The harvested hyacinth was then used in composting for organic farming. 172 vermiculture tanks were provided to beneficiaries in eight villages thereby promoting the cultivation of earthworms

to convert organic waste into natural fertilizer. With the support of the project, two fishing free zones were established with the participation of the communities to ensure increasing fish populations in the Lake, benefitting approximately 250 households.

In the environmental conservation and forestry sector, trainings were delivered to enhance the knowledge and capacity of local communities in sustainable resource management. The trainings reached 92 beneficiaries (53 females, 39 male) from 15 community-based organizations in the Inle Lake watershed area. Topics covered included nursery practice, plantation and natural forest management; capacity development for organizational management and technical application in environmental conservation; watershed management and biodiversity conservation training; and community forestry and agroforestry training. Upon completion of the training, trainees could use their skills in assisting villages in developing community-based natural resource management plans.



Figure 2: The Forest Department provides training on watershed management to participants in Pywe Kan Plantation



Figure 3: Organic composting using hyacinth

Community forestry was promoted in Kalaw and Nyaung Shwe Townships. During the project, land use plans for 23 villages were produced and priority conservation and natural resource management activities identified. Forest User Groups were formulated along with a management plan for the next 30 years. To re-forest areas that had suffered the effects of deforestation, technical assistance and in-kind assistance was provided to beneficiaries with the provision of seedlings, fire protection and regeneration improvement felling. 1654 households participated in forestry activities and by the end of the project, community forestry certificates were issued by the Forest Department to eight Forest User Groups which are now better able to manage forest resources. This was an important achievement at community level in conserving the watershed area of Inle Lake.

Because of the increased knowledge on environmental conservation, community-based watershed management increased, resulting in 1302 acres of reforestation by local communities. By June 2014, the project provided electricity to 609 rural households in 11 villages, saving at least 600 metric tons of firewood per year¹.

Soil and water conservation efforts resulted in the reinforcement of 56,000 cubic feet of Pwehla Pond Bank and construction of a concrete spillway at Kywephu Weir Kyone in Pindaya Township; resulting in increased access to irrigated water and water for household use in the area. The construction of contour bunds and planting of crops for bund stabilization were completed on 132 acres in Hmwedaw and Kyone Villages, thereby promoting soil conservation, water retention and reduced erosion.

Soil conservation activities on 657 acres of agricultural land resulted in a reduction of approximately 15,000 metric tons of topsoil being run off into the Lake. A technical assessment showed that 10 out of 19 villages required water redistribution tanks to ensure access to safe drinking water. With project support, the gravity flow and water supply from Taungchay Spring was improved and could supply 2725 household in 19 villages with clean water. Additionally, the new water system at Ye U Spring supplied water to 1038 households across eight villages; saving the inhabitants a one or two-hour boat ride to fetch water for use in their homes.



Figure 5: Improved Access to Water at Pawnu Dam

Because of the range of activities carried out by the project, communities are now able to expand the network of community-based organizations (CBOs) in and around the Lake, and to better voice their needs for action for conservation and community development effort. Over the project life cycle, 26 community-based organizations (CBOs) were established to carry out conservation and community development activities; significantly increasing the number by 20 as compared to the 6 that were operational at the beginning of the project.

The project also enabled CBOs to continue conservation and community development activities through tailored technical knowledge and skills trainings, increasing their participation in the consultation workshops on the formation of the Inle Lake Authority, development of the Inle Lake 5-Year Plan, and awareness-raising on biosphere reserves.

- **Revised Output 2: Terms of Reference for Inle Lake Management Mechanism Established**

As project stakeholders steadily began to understand and appreciate the urgent need for establishing a management mechanism for the Lake, UNDP took the lead in advocating for the establishment of an Inle Lake Management Authority.

In June 2014, a “Knowledge Sharing Workshop on Lake Management Practices” was organized in Taunggyi, bringing in experts from the International Lake Environment Committee and lake management authorities of other countries to exchange experiences with Myanmar stakeholders. Participants included ministers and senior officials from the Shan State Government, respective government departments at Union level, line government departments at the state level, parliament members, development partners and implementing agencies in the Inle Lake watershed area, civil society organizations, ethnic community groups and representatives from the hotel industry.



Figure 4: Construction of contour bunds in Zay Kan Village

¹ Baseline survey showed that one household uses 2 metric tons of firewood every year. The assumption of this project is that use of firewood would decrease by 50% if households have access to electricity



Figure 6: Participants from the Workshop on the Functions of the Inle Lake Authority

Resource persons from the International Lake Environment Committee (Japan), Chilika Development Authority (India), Laguna Lake Development Authority (Philippines), Putrajaya Lake (Malaysia), and Rawapening Lake (Indonesia) also participated, sharing their knowledge and experiences on international practices for Lake Management. The workshop enhanced understanding by the Inle Lake stakeholders of the importance of governance structures, coordination mechanisms and responsibilities for natural lake management. It also provided a platform for all stakeholders to discuss and identify possible options for an Inle Lake Management Mechanism.

In December 2014, UNDP facilitated a visit to Lake Chilika, India for a group of government officials and representatives from civil society. Chilika was chosen as the destination for the visit because of its similarities to the Inle Lake efforts in watershed management and biodiversity

conservation. During the visit, the Myanmar delegation learned about the evolution of the Chilika Development Authority (CDA) and the challenges faced in its lake management efforts. Participants were also exposed to key restoration methods which involve a balance of protecting the Lake while improving the livelihoods of the communities living in the surrounding areas.

The participants also learned about the management and institutional structure of the CDA as well as the coordination role it plays amongst lake stakeholders especially. Insights were gained into the mandate of the CDA, one which ranges from lake protection to restoration, as well as surveying, planning and preparation of proposals for integrated management in and around the Lake. The CDA also shared experiences on the funding mechanism used which has contributed to the long-term sustainability of the CDA. Upon their return, applying lessons learned from the week-long exposure visit, the Myanmar delegation conducted a series of consultation workshops with key stakeholders to discuss options for strengthening the management of the Lake at community, state and national level. In depth discussions were held amongst stakeholders to explore options for establishing a management mechanism. Representatives from the Shan State Government, Shan State Parliament, line ministries, private sector, and local communities contributed to these discussions during which terms of reference (TOR) were finalized for the proposed Inle Lake Authority. The terms of reference were shared in May 2015 and approved during the Shan State Cabinet meeting in June 2015.

Despite the considerable advocacy efforts and the time and resources dedicated to this process, it did not result in the establishment of a management authority as anticipated. Following the democratic elections in November 2015 and the transition to the new National League for Democracy (NLD) led government, the Inle Lake Authority was suspended in March 2016. Additionally, as part of the transition, the Ministry of Environmental Conservation and Forestry (MOECAF) was dissolved and superseded by the new Ministry of Natural Resources and Environmental Conservation (MONREC). After the government transition in early April 2016, with support from UNDP, the Forest Department of the newly formed Ministry (MONREC), organized a meeting in Taunggyi. During this meeting, the Forest Department presented to the new government, the Five-Year Action Plan for Environmental Conservation and Sustainable Management of Inle Lake (2015/2016 to 2019/2020). The Department used the opportunity to update the new government on the progress of conservation activities that had taken place under the previous government.



Figure 7: The Project Technical Advisory Group on a Site Monitoring Visit

Department also advocated the need for a lake management body. In June 2016, the Inle Lake Authority was re-constituted with representatives from the Shan State Government, local communities and ethnic groups. The Inle Lake Authority was given the mandate to ensure implementation of the Five-Year Action Plan (2015/2016 to 2019/2020) as well as the coordination and management of lake conservation efforts. The Shan State Government has begun drafting the Inle Lake Conservation Law. Once approved, the law will serve as the legal basis on which the Lake Authority can operate. Currently, the Authority is operating based on the notification from the Shan State Government.



Figure 8: Forest Department officials engage with local fishermen; Forest Department leads an anti-plastic campaign at Inle Lake

- Output 3: Knowledge and Information Sharing about Inle Lake Conservation Efforts
- Revised Output 3: Knowledge of National and Local Stakeholders Enhanced for Maintaining Inle Lake as a Biosphere Reserve Enhanced

A key objective of the project was to build knowledge and share information about Inle Lake conservation efforts, especially with local communities. Through a grant provided to a local NGO, the Environmental Education Centre (EEC) was established at Inle Lake in 2013 with the support of the project. Managed by the Intha Literature, Culture and Regional Development Association (ILCDA), the Centre was established as a learning and knowledge center; and as a platform to bring the authorities and communities together to discuss and actively participate in conservation and community development efforts. The establishment of the Centre also led to better coordination between relevant government departments and communities through the ILCDA.

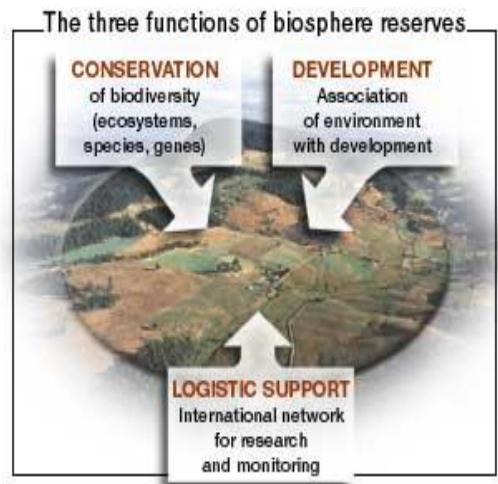
Run by local Intha people, the Centre's displays educative materials on global warming and climate change; Inle Lake conservation activities; wild flora and fauna of the region; historical and cultural sites and traditional livelihoods and agriculture. Youth groups meetings resulted in campaigns for plastic and water hyacinth collections. The Centre attracts up to 400 tourists per month and reached out to 928 participants through the organization of meetings, workshops and awareness raising activities centered on biodiversity conservation and environmental management topics. Through the work of the EEC, communities are better able to voice their needs and propose actions for lake conservation and community development.



Figure 9: Workshop with the EEC to improve awareness-raising of Lake conservation

During the project period information, education and communication (IEC) materials including pamphlets and video script were developed and shared with stakeholders. In December 2014, the project supported officials from Inle Lake Wildlife Sanctuary to participate in the 8th Southeast Asia Biosphere Reserves Network meeting, and in the 2nd Asia-Pacific Biosphere Reserves Networks Strategic Meeting and Asia-Pacific workshop on 'strengthening capacity for management of biosphere reserves and protected areas' which took place in Cambodia. A workshop on promoting knowledge on UNESCO's MAB Programme was also conducted in Nyaung Shwe Township, Shan State in February 2015.

Throughout the project, efforts were also undertaken to raise awareness about UNESCO's Man and the Biosphere (MAB) Programme and Inle Lake's nomination for designation as the first Biosphere Reserve in Myanmar under the Programme. In March 2015, at a stakeholder workshop on 'strengthening capacity for management of biosphere reserves', the Deputy Minister of MOECAF emphasized that "in collaboration with UN agencies and international organizations, Myanmar was promoting a modality that favors parallel development and conservation efforts to achieve co-existence between nature and humans". He also highlighted that the implementation of the Inle Lake Biosphere Reserve is a cross-cutting issue that would require the engagement of all stakeholders to promote best practices in sustainable development and community-based natural resource management.



To increase awareness of biosphere reserves (and Myanmar's nomination process) support was provided to MOECAF to develop a coordinated communication strategy at government and community level to increase awareness of biosphere reserves and their importance in promoting environmental conservation, biodiversity preservation and sustainable livelihoods and development efforts at Inle Lake. An urgent need for educational initiatives for youth and community members was identified to enable increased ownership and sustainable management of the Lake, which has resulted in increased numbers of educational activities, especially for youth, and community engagement and awareness-building activities, led by the Forest Department at Inle Lake.



To further enhance the capacity of government officials in strengthening strategic communications for biosphere reserves in Myanmar, the project supported the participation of three officials in the 9th Southeast Asia Biosphere Reserves Network (SeaBRnet) Meeting held in Malang, Indonesia in October 2015. The meeting focused on visibility, branding and communication strategies for the promotion of biosphere reserves with discussions on –possible future collaboration between Southeast Asia Biosphere Reserves and MAB National Committees in the region. The Myanmar delegation also gained valuable insights on the management of biosphere reserves from Indonesia. The Executive Director of the Indonesian MAB Programme shared experiences and lessons from Indonesia's MAB initiative.

The emphasis was on the need for the use of innovative methods towards the continued development and sustainable management of the Lake. Ideas included eco-tourism destination management models for the region. The UNESCO Regional Science Bureau for Asia and the Pacific also highlighted the importance of developing Inle Lake as a replicable model for community-led development efforts towards achieving sustainable development objectives through participatory governance systems.

To strengthen the capacity of senior government officials to participate in and contribute to international fora, especially through the World Network of Biosphere Reserves, the project supported the participation of MONREC officials in the 4th World Congress of Biosphere Reserves (WCBR) held in Lima, Peru from 14 – 17 March 2016. Key issues discussed included biodiversity and cultural diversity, climate change, sustainable use of natural resources, ecological restoration, education for sustainable development and youth engagement. The main results of this

Congress were the Lima Declaration and the finalization and endorsement of the Lima Action Plan (2016-2025), which will guide the MAB Programme and its World Network of Biosphere Reserves for the next ten years.



Figure 10: Participants during a knowledge session on the Lake Management Authority

in the conservation of Inle Lake. In line with the UNESCO MAB Programme's 2015-2025 objective of 'facilitating sustainability, science and education for sustainable development', one of the key aims of the Centre was to follow an evidence and science-based approach to environmental conservation and biodiversity preservation. The Centre will also play a role in ensuring the sustainability and continuity of future project interventions. The Centre is also meant to encourage innovative sustainable development of the Lake, including potential eco-tourism destination management models for the region.

It was also envisaged to evolve as a 'go to platform' for innovative awareness-raising initiatives through social

A series of workshops, discussions and training sessions provided opportunities for local community representatives to actively engage and exchange ideas regarding a sustainable management mechanism for Inle Lake, and for potential awareness-raising initiatives to inform and educate the public. A repeated point in all these knowledge sharing fora was the need for a coordinated management mechanism that would ensure participation by and cooperation between government and civil society. Also, frequently highlighted was the need to follow a data and sound-science based approach for environmental conservation and biodiversity preservation to ensure the sustainability and continuity of results.

The project promoted active participation and exchange between the Forest Department, UNESCO, UNDP, and local representatives at Inle Lake to obtain inputs for an effective and inclusive lake management body, and innovative awareness-raising techniques, including social networking, community-led campaigns, private-sector partnerships and environmental education initiatives led by schools and universities.

Under the leadership of MOECAF and with financial support from the Project, the Inle Centre for Biosphere Conservation and Sustainable Development was established as an institutional mechanism to improve coordination and collaboration between partners, strengthen communication, enhance capacity development activities, and increase participation by local communities and the range of stakeholders involved



Figure 11: A view of the Inle Centre for Biosphere Conservation and Sustainable Development

media, community-led campaigns, private and public sector partnerships, academic research, and environmental education initiatives led by schools and universities. In the longer term, it is envisioned that the Centre will garner support for greater integration of stakeholders to collectively address environmental and sustainable development issues. It will also serve as a focal point to motivate nomination and designation of more biosphere reserves in Myanmar, and further enhance Myanmar's contribution and engagement with the World Network of Biosphere Reserves (WNBR). It is currently in use as a place for learning and sharing environmental knowledge. Along with require renovations to the physical space, future support should serve to upgrade the functions of the Centre in line with the UNESCO MAB objectives;

- Output 4: Mainstreaming Environmental Activities into National and Regional Development Plans

In 2014, the Forest Department of the then ministry (MOECAF) requested assistance from UNDP for the development of its next 5 Year Action Plan (2015/2016 to 2019/2020) for Inle Lake management. Seeing this as a strategic investment crucial to the future management of the Lake, UNDP worked with the Department to develop a plan that would outline concrete steps and actions that the government, local communities and other stakeholders would need to take to conserve the Lake's ecosystem while maintaining the Lake's cultural heritage and local livelihoods. During this process, UNDP identified the gaps and areas for improvement from the previous plan, namely the absence of a coordination mechanism that would bring key players and stakeholders together over any interventions designed for the conservation of Inle Lake.



Figure 12: Participants during the formulation of the 5 Year Inle Lake Conservation Action Plan

UNDP provided technical assistance for the development of a new action plan that would ensure priority strategic areas would be included as part of the government's priorities in the plan. UNDP's facilitation and assistance to this process also helped the authorities appreciate that conservation efforts for Inle Lake went beyond forest management and reforestation - but that it would require a sector-wide approach and importantly, commitment and participation of other ministries and line departments outside the Forest Department. To enhance ownership of the project and management of Inle Lake, UNDP successfully advocated that responsibility for management and implementation of the plan be shifted from the Shan State Government to the Forest Department under the Ministry. The government's commitment to this process resulted in UNDP's mobilization of additional financial resources and technical assistance. UNDP also secured approval from Government of Norway to support this activity under the project framework. Despite endorsement of the action plan by the previous Government, it was not implemented in its entirety. Following the government transition in early 2016, the new action plan was finalized by the Forest Department, under the new Ministry of Natural Resources and Environmental Conservation (MONREC).

The plan identifies nine priority issues:

1. Institutional framework for Inle Lake conservation is required
2. Baseline data on the natural and social environment are essential for future conservation and development of Inle Lake
3. Threats to human health must be reduced, and overall living conditions improved for Inle Lake residents
4. Improved environmental awareness is required at all levels: national, state and local
5. Deforestation rates are unsustainable, and reforestation in the watershed is essential

6. Biodiversity conservation and fisheries resource management are critical for sustaining livelihoods
7. Sustainable agricultural practices are required, especially reductions in the use of chemical fertilizers and pesticides
8. Sedimentation and soil erosion rates impact lake health and productivity
9. Promotion of sustainable tourism practices, including improvement in infrastructure, training and capacity building for local people

The new government accepted and endorsed the new plan and stressed that implementation of any future activities identified under the Inle Lake Conservation 5-Year Action Plan must be done in line with the priorities identified by MOECAF/MONREC and key stakeholders. As a member of the World Network of Biosphere Reserves, Myanmar would also need to ensure that any action plans regarding conservation and rehabilitation efforts at Inle Lake are aligned to the sustainable development goals (SDGs) and the 2030 Sustainable Development Agenda, which Myanmar's previous government endorsed in 2015.

C. CHALLENGES AND LESSONS LEARNED

Despite the successes that the project recorded during its implementation between 2012 and 2016 which included the technical assessment of Inle Lake to establish much needed baseline data; inscription of Inle Lake as a biosphere reserve; the development of government-led action plans for the sustainable management and conservation of Inle Lake; increased awareness on the importance of lake conservation; and an improvement in the quality of life of local communities through the implementation of environmental conservation and development activities; there were also some significant constraints.

The major constraint was related to the lack of a coordinated and effective lake management system. This meant that there was no strong leadership and coordination function in place; one which could have taken the lead that was required for effective planning, decision-making, and the coordination of different stakeholders and actors. Looking forward, a lake management system is clearly needed to effectively plan, implement, and promote the sustainability of the interventions required to manage and reverse the deteriorating conditions of Inle Lake. Although the Inle Lake Authority has now been established (in June 2016), it has rarely been able to take actions to implement any of the proposed solutions that were proposed in the new Action Plan (2016-2020). This has led to low levels of trust and confidence by local communities and stakeholders; a situation which has not been helped by a lack of information sharing by the Authority regarding its current or future activities.

In 2015, of its own initiative and without UNDP or the Government of Norway's financial support, the (previous) government established the Inle Lake Conservation Trust Fund (ILCTF). The Fund was financed by a US\$10 per person levy on international tourists visiting the Lake. At the time the Trust Fund was established, it was envisaged that revenues from tourist fees would be split evenly: fifty percent (50%) would be deposited in the Trust Fund to support lake conservation efforts by communities (complementing those already supported by the project); and the other half would be deposited in the Shan State Treasury. Although UNDP provided technical expertise to outline the procedures for the accountable use and management of trust funds, the operation of the Fund to date has not conformed to international good practice for trust fund management. This has led to negative speculation about how tourism revenues were collected and used; and further exacerbated the low levels of trust between different stakeholders and actors. Without a functioning lake management mechanism in place, management of this Trust Fund remains a challenge. Draft guidelines for trust fund management are currently being reviewed by the Shan State Government. For the success of any future projects, a strong lake management authority is required to manage the Trust Fund and make decisions regarding the use of revenues generated by the tourist levy.

As noted by the evaluation of the project, the short duration of the project (2012-2016) was also a factor that limited promotion of conservation efforts that were designed to have long term impact². Conservation efforts at Inle Lake require a longer time frame within which strategic goals and activities, aligned with national development priorities, can be well planned and implemented. These goals will also require sustainable and predictable funding so that the sustainability of conservation activities is not compromised. Donors and development partners may provide financial resources, but without the commitment from the government, be it finances, staff or time, future projects at Inle Lake will not be successful. Though the project worked with and through local institutions and communities, the budgets provided for participation in community conservation development efforts were relatively small; limiting the extent of capacity development and awareness-raising initiatives³.

For local Intha communities, this project was the first experience they had in managing and implementing project activities, and many useful lessons were learned. Building local capacity in project management skills (writing

² Inle Lake Conservation and Rehabilitation Project, End of Project Evaluation (2015)

³ Inle Lake Conservation and Rehabilitation Project, End of Project Evaluation (2015)

proposals and reports, managing finances, monitoring and evaluation) is essential. With improved capacity, local NGOs and CBOs will be able to better plan, design, implement, manage and monitor conservation activities. Because of the many workshops, training courses, and project visits to villages, local communities gained greater understanding of the deteriorating conditions of the Lake and the causes; more awareness-raising activities are needed to reach larger numbers of local people. For local communities who rely on the Lake and its surrounding area for their livelihoods, the capacities of these local communities and actors need to be continuously enhanced. In this regard, the EEC has the potential to become a hub for education on environmental and natural resource management – one where people can learn and acquire skills to take back to their communities.

D. LOOKING AHEAD

Rehabilitating Inle Lake requires long term strategic planning and predictable financing to ensure the continuity and sustainability of all interventions. Sustainable development and management of the Lake and its watershed area will also require communication, coordination, cooperation and integrated approaches among government ministries, line departments, local authorities and communities. With the designation of Inle Lake as a biosphere reserve in June 2015, it is important to build upon the results gained during the project implementation phase. The project and its associated activities have created high expectations among local communities and stakeholders; and the momentum gained towards sustainable management of the Lake cannot be lost. Importantly, local communities who depend on the Lake must be continually engaged in conservation and preservation efforts.



Going forward, it is critical that scientific monitoring mechanisms in place at Inle Lake are improved upon to continuously monitor water quality, sedimentation, and excessive use of chemical fertilizers. Activities around and within the Lake and its environs must be monitored to ensure compliance with established protocols. The zonation-scheme also proposed for Inle Lake must be carefully implemented and adhered to. While scientific techniques are applied to study, monitor and protect the Lake, further research must be encouraged to build on the gains realized throughout the project. The Ministry of Natural Resources and Environmental Conservation, the Shan State Government and the newly-established Inle Lake Authority have a role to play in the enforcement of the zonation area and in ensuring that the “logistical function” of biosphere reserves is included in any priority actions taken by the government. The project evaluation commissioned by UNDP in 2015 revealed that most of the intended results for the project were achieved, especially in terms of improved environmental governance for Inle Lake conservation, and significant progress was made to this end.

The project was found to be highly relevant to the identified need for improved conservation and management of the Lake and was successful in garnering support from the local communities, Shan State authorities and the Union Government. The evaluation also recorded many advantages for Inle Lake conservation and management because of the project namely: awareness raising of local communities on the causes of and mitigation measures for deterioration of the Lake and capacity building of local NGOs, CSOs and village leaders⁴.

The evaluation commended UNDP for the essential role that the project staff played to evolve the project. Because of the drive the team had to implement the activities; the good working relationships they established with MOECAF, NGOs, CBOs and local communities; and their commitment to the improvement of conservation efforts at Inle Lake, activities under this project were successfully conducted. The evaluation also noted that most benefits of the project would be sustainable in the long-term and they had established a strong basis for improved environmental governance related to Inle Lake conservation. It also highlighted that the likelihood of continuation and sustainability of the project benefits upon completion were high, given the importance of Inle Lake conservation to the Union Government and local stakeholders⁵.

However, much work remains to be done in the coming years to create a functioning lake authority which is financially sustainable, can manage conservation activities, monitor change over time, and improve overall environmental conditions in the Lake. UNESCO, in its capacity, has advised that any future interventions at Inle Lake should be designed around the three foundational pillars of biosphere reserves: conservation, development and logistical support. This approach will ensure that new projects and activities build on the results already achieved through 2016. The success of any future projects will be determined by the 'operational' strength of the Lake Authority to ensure that the underlying causes of the environmental and social problems in and around the Lake are addressed (and maybe enforced) in a sustainable manner.

The future of Inle Lake will require strong government commitment (at Union and State Levels) to reforming and strengthening of the Lake Authority to improve its management capacity, governance arrangements, effective and efficient utilization of revenues as well as piloting new revenue collection mechanisms to ensure the sustainability of the current investments. Institutional mechanisms such as the Myanmar MAB National Committee and the Inle Centre for Biosphere Conservation and Sustainable Development have been put in place for sustainable management of the Lake and require a concerted effort to ensure that they play their role.

Following a request from the Government of Myanmar for continued support to Inle Lake conservation efforts, UNDP is in discussion with potential donors regarding a new phase of the project. Considering the challenges and lessons learned from implementation of Phase 1, the next phase would need to focus on ensuring that the Inle Lake Authority is fully operational (both administratively and technically), and can operate effectively and efficiently with support from all relevant stakeholders, and that financial resources are sustainable and efficiently used to support the development of Inle Lake communities whilst addressing a range of conservation and environmental issues.



⁴ Inle Lake Conservation and Rehabilitation Project, End of Project Evaluation (2015)

⁵ Inle Lake Conservation and Rehabilitation Project, End of Project Evaluation (2015)

E. PHOTOS FROM THE FIELD



Figure 13 Community nursery, wind breaker, agroforestry plantation



Figure 14 The use of efficient stoves



Figure 15 Organic farming



Figure 16 Pig farming and chicken poultry activities



Figure 17 Extensive application of soil and water conservation activities



Figure 18 Conservation agriculture demonstration plots (maize and beans)



Figure 19 Construction of water pump house in Taungchay Spring for the development of a water pipeline system



Figure 20 3500-gallon tank increases access to water using the pipeline system



Figure 21 Figure 21 Renovation of Paw Nu Dam and newly irrigated farms



Figure 22 Project monitoring and evaluation activities



Figure 23 DWTV and MRTV 3 film project activities as part of their production of documentaries to be aired on TV stations nationally and internationally

F. FINANCIAL REPORT

Inle Lake Conservation and Rehabilitation Project Budget and Expenditure 2012 - 2016								
	Activities	Funds Received	Expenditures					Total Expenditure
			2012	2013	2014	2015	2016	
Original Project Document								
Original Outcome	To restore the Environment Stability of Inle Lake with the Improvement of the Quality of Life of Local Communities							-
Output 1	Technical Assessment Report for the Preparation of a Conservation and Management Plan for Inle Lake Completed	106,492	36,768	66,856	75,747			179,371
Output 2	Small Grant Facility for CBOs and NGOs Established to Form a Trust Fund for Implementation of Environmental Activities	1,318,264	699,769	544,407	122,576			1,366,753
Output 3	Knowledge Sharing Platform Established and Information Disseminated Among Relevant Stakeholders	79,830	52,779	1,121	25,930			79,830
Output 4	Environmental Activities Mainstreamed into National and Regional Development Plans	39,172	16,390	2,791	19,991			39,172
No Cost Extension Period								
Revised Outcome	Strengthened Institutions for Inle Lake Management and for Improvement of the Quality of Life of Local Communities							-
Output 1	Nomination Dossier for Inle Lake as a Biosphere Reserve re-submitted by the Government of Myanmar	83,208				38,278		38,278
Output 2	Terms of Reference for Inle Lake Management Mechanism Established	172,437				75,428		75,428
Output 3	Knowledge of National and Local Stakeholders for Maintaining Inle Lake as a Biosphere Reserve Enhanced	22,000				16,813	54,428	71,241
Output 4	Environmental Activities Mainstreamed into National and Regional Development Plans	-						-
	M&E and Audit	83,620	1,226	10,151	9,019	16,447		36,843
	Total GMS 7%	133,352	56,478	43,775	17,743	10,273	3,810	132,079
	Total Cost (Programme and GMS)	2,038,375	863,410	669,101	271,006	157,239	58,238	2,018,994
	Balance							19,381

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