Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Taninthayi Range in Myanmar
(Phase I, Stage I)
(PD 723/13 Rev.2 (F))

Project Completion Report

(1st April 2018 - 31st March 2020)

May 2020

Project Profile

Host Government		The Republic of the Union of Myanmar
Executing Agency and Contact Information		Forest Research Institute, Forest Department Ministry of Natural Resources and Environmental Conservation Yezin, Nay Pyi Taw, MYANMAR Phone: 95-67-3416524, 407472, 3416523 Fax: 95-67-3416522 Email: friyezinfd@gmail.com, tnoo71@gmail.com
Starting Date		1st April 2018
Duration of Project		1st April 2018 to 31st March 2020 (24 months)
Project Costs		*US$ 140,000*

Project Staff

1	Dr. Thaung Naing Oo	Director, Forest Research Institute	Project Manager
2	Mr. Hla Myo Aung	Assistant Director, Forest Research Institute	Team Leader, Capacity Building Team
3	Dr. Zar Chi Hlaing	Staff Officer, Forest Research Institute	Team Leader, Research and Development
4	Mr. Aung Kyaw Soe	Staff Officer, Taninthari Township, Forest Department	Local Field Officer of the Project
5	Dr. Phyu Phyu Lwin	Staff Officer, Forest Research Institute	Leader, Project Management Team
6	Ms. Tin Hnaung Aye	Range Officer, Forest Research Institute	Member of Research Team
7	Mr. Ye Yint Tun	Research Assistant 3, Forest Research Institute	Member of Capacity Building Team
8	Mr. Nyi Lwin Soe	Project Secretary	Project Management Unit

Note: Researchers from Forest Research Institute and Staff Members of Taninthari Township/District Forest Department are also participating in Project Activities, as necessary.

Executive Summary

The Taninthayi Mountain Range, along the border between Myanmar and Thailand, covers a global important terrestrial eco-region with a transition zone from continental dry evergreen forests common in the north to semi-evergreen rain forests to the south. As a consequence, they contain some of the highest diversity of both bird and mammal species found in the Indo-Pacific region. The world's smallest mammal, Kitti's hog-nosed bat (*Craseonycteris thonglongyai*), equal in mass to a large bumblebee, resides in the limestone caves of this eco-region. Recent studies indicated that this eco-region is recognized as one of the world's largest populations of Asian elephants (*Elephas maximus*) and tigers (*Panthera tigris*) survive in the forests along the border between Thailand and Myanmar. Besides biodiversity features, the rugged watersheds of the Tenasserim, Dawna, and other mountain ranges drain into the mighty Tennaserim, Salween, and Chao Phraya rivers, supporting globally endangered and endemic species as well as a diversity of human cultures. Karen and Mon people live in the Taninthayi Range and many other indigenous cultures call this area home. In many ways, the traditional practices of these groups provide a template for sustainable use of the region's rich natural resources.

However, the outstanding biodiversity features and cultural diversity of the Taninthayi Range are vulnerable due to poaching, fragmentation and encroachment for agriculture, illegal logging, settlements inside and around the park, and human-elephant conflicts. In addition, intensive hunting of wildlife occurs in both Myanmar and Thailand. Unsustainable harvesting of non-timber forest products is prevalent throughout the eco-region. Some areas have been subjected to seasonal forest fires, the impacts of which are unclear. Therefore, long-term viability of biodiversity in the Taninthayi depends on promoting community oriented biodiversity conservation in the biodiversity corridors in a framework of the trans-boundary biodiversity conservation area (TBCA)

The development of the project seeks to contribute to the long-term sustainable conservation of trans-boundary biodiversity conservation in the Range. Specifically, the project aims at enhancing national capacity and resources in biodiversity conservation and ineffective conservation of forest ecosystems and biodiversity in the Taninthayi Range in Myanmar. Expected outputs of the project include: 1) capacity building of national institutions to design and implement the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar; 2) establishment of initial institutional mechanisms for the transboundary biodiversity conservation in protected areas in the Taninthayi Range; and 3) strengthening of local stakeholder participation and livelihoods of forest-dependant local communities in the transboundary biodiversity conservation areas.

Project interventions extended to improve local community livelihoods. There was an expansion of the most effective Community-based Livelihood Development Program activities, including nature-based tourism interventions as well as other promising income-generating opportunities. Project interventions also made to ensure multi-stakeholder participation through the village consultation process, village development zoning, and community-based natural resource management in the Project site as well as the collection of baseline information on wildlife distribution

and assessment of tree species diversity, socioeconomic conditions of the local communities, availability of the NTFPs in the and adjoining forest areas.

Project provided series of trainings and workshops to strengthen the capacity of project staff, rangers, border patrol police, and local communities. The provision of the training was especially important in Myanmar, where staff members have little or limited access to training, budgets for management are very small, and there are very few rangers and facilities on the ground, especially in protected areas and those who are working at the Forest Department in some Townships located in the border areas.

Mainstreaming of the project activities is the most appropriate approach for the project sustainability. The Forest Department is responsible for operating, maintaining and developing the biodiversity conservation including the Taninthayi Range, and expects to be able to replicate the model conservation approach in other protected areas in the country. Sharing project results, implementing strategies and experiences to the relevant stakeholders and partner NGOs would also be helpful to replicate and continue the some of the project activities in the Project areas and other similar areas.

The political support is of crucial important for the successful implementation of the transboundary Facilitation, coordination, resource mobilization and law enforcement could be more effective only when the Project receives political supports. Capacity building programmes are very crucial for all relevant stakeholders. Transboundary biodiversity conservation almost always includes a variety of actors so that it is very important to establish a trust and coordination mechanism among relevant stakeholder. Habitat management and conservation for the plants and wildlife plays a vital role in transboundary biodiversity conservation. In this regards, The technical details and baseline information about biodiversity, social, economical, cultural, legal etc. of the transboundary areas are inevitably needed to ensure the long-term success of the transboundary biodiversity conservation initiative.

PROJECT COMPLETION REPORT

1st April, 2018 – 31st March, 2020

1. Project identification

1.1 Context

Transboundary conservation is a process of cooperation to achieve conservation goals across one or more international boundaries. Indeed, transboundary conservation is often both about protecting nature and about promoting cooperation among people of different nations. So while it can protect species and ecosystems, it can also help divided communities come together, connect people of different cultural, ethnic or religious backgrounds, stimulate social and economic benefits, strengthen political relations and mitigate tensions.

The Taninthayi Mountain Range, along the border between Myanmar and Thailand, covers a global important terrestrial eco-region with a transition zone from continental dry evergreen forests common in the north to semi-evergreen rain forests to the south. They contain some of the highest diversity of both bird and mammal species found in the Indo-Pacific region. The world's smallest mammal, Kitti's hog-nosed bat (*Craseonycteris thonglongyai*), equal in mass to a large bumblebee, resides in the limestone caves of this eco-region. Recent studies indicated that this eco-region is recognized as one of the world's largest populations of Asian elephants (*Elephas maximus*) and tigers (*Panthera tigris*) survive in the forests along the border between Thailand and Myanmar. Besides biodiversity features, the rugged watersheds of the Tenasserim, Dawna, and other mountain ranges drain into the mighty Tennaserim, Salween, and Chao Phraya rivers, supporting globally endangered and endemic species as well as a diversity of human cultures. Karen and Mon people live in the Taninthayi Range and many other indigenous cultures call this area home. In many ways, the traditional practices of these groups provide a template for sustainable use of the region's rich natural resources.

However, the outstanding biodiversity features and cultural diversity of the Taninthayi Range are vulnerable due to poaching, fragmentation and encroachment for agriculture, illegal logging, settlements inside and around the park, and human-elephant conflicts. More specifically, the major threats include subsistence poaching for bush meat, forest clearing and subsequent land encroachment for small and large scale agriculture and fragmentation, influx of refugees and immigration during the war, illegal and legal logging, increasing settlement inside protected areas and in the buffer zone, forest fires and repeated burning leading to permanent ecosystem degradation, a significant history of human-elephant conflict along park boundaries, and lack of collaboration on the ground to management contiguous protected areas and lack of a mechanism and a common interests to manage the Taninthayi Range at landscape level.

In addition, intensive hunting of wildlife occurs in both Myanmar and Thailand. Therefore, long-term viability of biodiversity in the Taninthayi depends on promoting community oriented biodiversity conservation in the biodiversity corridors in a framework of the trans-boundary biodiversity conservation area (TBCA)

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In light of importance of enhancing the transboundary initiative, this project seeks to address the problem associated with limited national capacity and resources in biodiversity conservation and ineffective conservation of forest ecosystems and biodiversity in the Taninthayi Range in Myanmar in the context of transboundary biodiversity conservation.

1.1.1 Social, cultural, economic and environmental aspects

Social and cultural aspects

The relative trend of the population of the area reveals rise and fall. The fall part of the trend is proved to be a reflection of socio-political processes of the area. However, in the future, there is a high tendency of population growth in the area due not only to biological potentials but also because of social reactions. The high tendency of the future population growth will largely be related to biological potential of reproduction in the existing population. High total fertility rate (3.7 child per women per life time), many young families in the communities (over 50% of the married couples are at the active reproductive range of 16-40), and many young people in the population (40% of the total population are between the age of 16-40) will lead to a rapid population growth (Technical report of TNR).

In Myanmar, the land ownership for houses (building) and cultivation is issued by the government (Settlement and Land Records Department - SLRD). The major livelihoods in the Project site are agriculture. Beetle nut, cashew and rubber are the major crops for agriculture. In the low land areas, paddy fields are common for livelihood, whereas shifting cultivation is practiced in the mountain areas. Due to the limited job opportunities in the Project area, many young persons (male and female) in the Project site works at the Thailand side (eg. construction, factories, retail sellers etc. as a daily workers) by crossing the Myanmar-Thailand border daily.

In the Project area, the communities can officially own the land for houses under the grant land title. The household in the study villages own land for their living (house)

but most of the household do not own land for cultivation. There are two types of cultivation in the studied villages - land for paddy field[1] and land for garden (perennial plants).

Almost all of the household in the studied villages own land for living (house), but most of the house do not own land for cultivation. Approximately, 91% of household have their crop cultivating land, but most of the cultivation land are not officially owned by the households. Average cultivating land area possessed by the household is 16.7 Ac. In the studied villages, several type of cultivating land are found via land for paddy, garden, Taungya (shifting cultivation for paddy). All the cultivation farms are rain-fed. The crop such as betel nut, coconut, banana, mango, cashew nut, pineapple, durian, rubber, lemon and coffee are planted in their garden. Although betel nut is the main garden crop in all studied villages, rubber and cashew nut are mostly found in the garden.

Local residents generally hold fairly good knowledge on environmental issues. The on-going Tanninthari Nature Reserve Project (TNR) project generally is in its initial phase of motivating local participation emphasizing on extension and educational activities in order to enhance their awareness and avoid confrontation with local people. Law enforcement is used just as a complementary tool for preventing serious forest and wildlife crimes. So far, no serious legal action has been taken against local residents. Thus, TNR still appears to be an open access land where hunting, fishing, gathering and cultivation activities are being accomplished in some degree by local residents as traditional ways of life. Accordingly, if serious actions are going to take place against illegal activities inside TNR with strong law enforcement, it may possibly spoil existing relations with local people (Technical report of TNR). It is likely that effective community talks to be conducted by the project would be important to enhance the full and effective participation of local communities in protected areas, in the TNR as well as the TNP in the Taninthayi Range.

Economic aspects

Most of the local communities in the project site are rural and dependent on forest resources for basic needs such as food, fodder, fuel, and shelter. Community forestry has been encouraged to ensure sustainable development of forest resources while conserving its biodiversity, wildlife, plants, and ecosystem.

In the project area, household activities can be categorized into five groups as agriculture, garden, daily wages, owned business, salary (company and non-government staff) and livestock. This household annual income estimation is both cash and subsistence. Generally, garden income is the highest contributor to total household income (96%) followed by salary (87%), owned business (55%), daily wages (40%), livestock (17%) and agriculture (10%). Among the studied villages in the Project area, Lae Taung, Ta Mote Chone and Chaung Naut Pyan, these three villages work mainly on the garden for their livelihood.

Furthermore, a community survey conducted for the Taninthayi Nature Reserve (TNR), indicates that most families (44%) inhabiting in the villages are making their living as horticultural farmers while 20% of households are practicing shifting

cultivation as a main livelihood strategy. Another 4% are farmers who grow rain-fed paddy rice on the lowlands. The remaining households are odd-job workers (23%) and a collective group of other professionals such as Government staff, company workers etc. (9%).

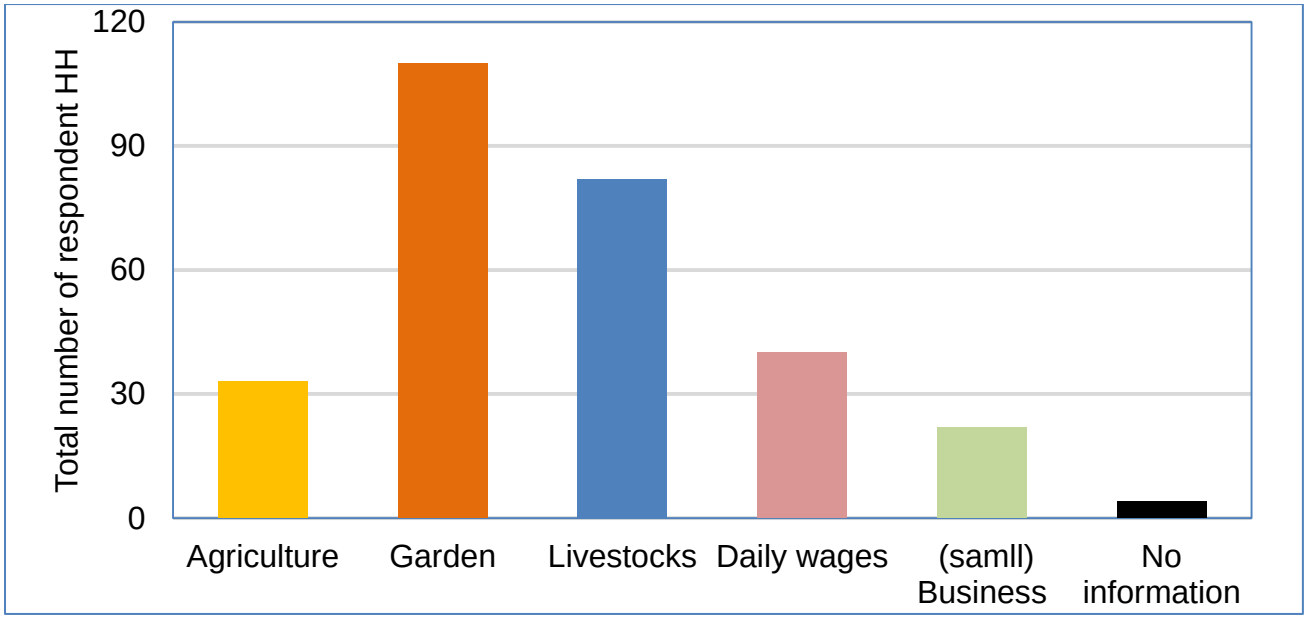

Figure 1. Households' livelihood activities in the study area

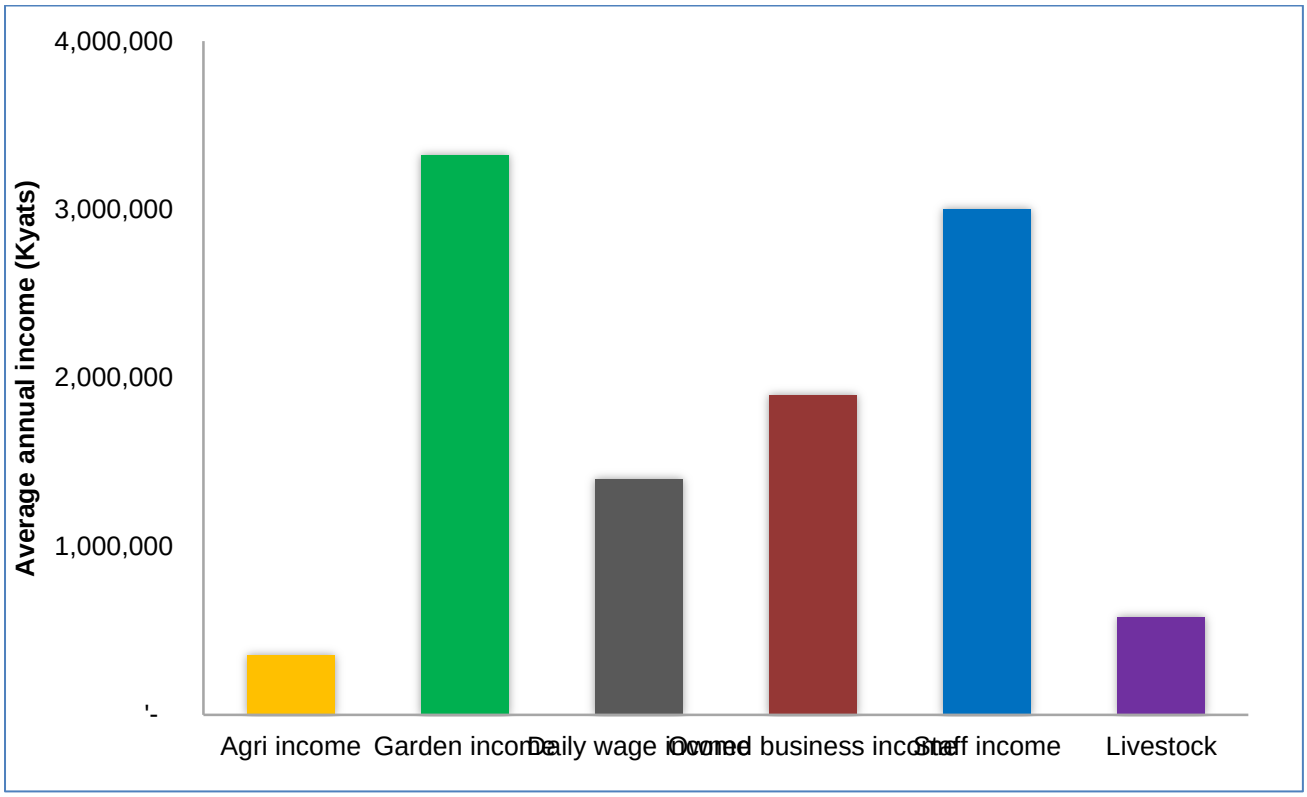

Figure 2. Average annual income based in the livelihood activities

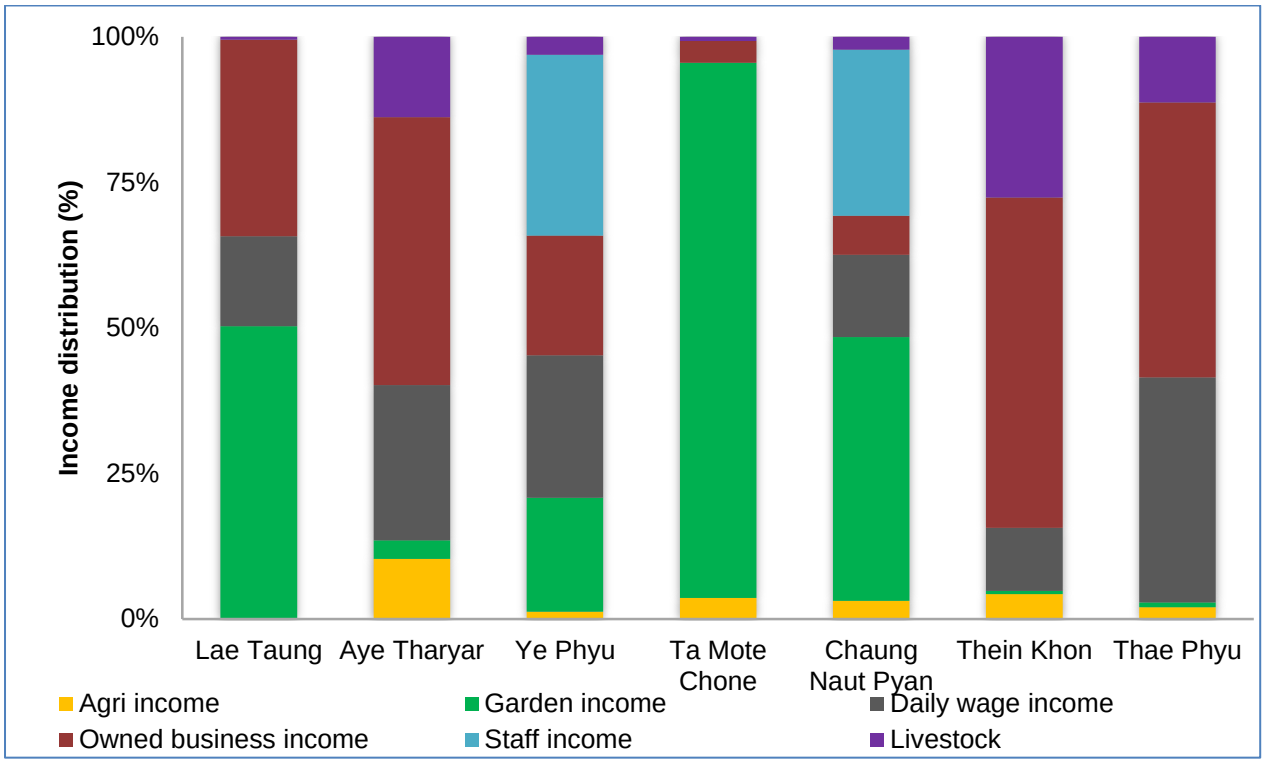

Figure 3. Percentage of income distribution bases on their livelihood activities

Environmental aspects

Total of 206 bird species including Gurney's Pitta were recorded during the survey in the proposed Lenya National Park, south Tanintharyi (Tenasserim) in degraded primary and bamboo forest in May 2015 (FFI, 2015). Gurney's Pitta *Pitta gurneyi* is the only bird species endemic to peninsular Thailand and Myanmar. It is designated as Endangered by IUCN Red List and it was initially thought to be extinct for some time after 1952, but was rediscovered in 1986 in Thailand. The search for Gurney's Pitta in Myanmar was started in 2003 and it was discovered that the species occurs at four sites with a maximum of 10-12 pairs at one location in Tanintharyi (FFI, 2015). A total of six Gurney's Pittas were recorded in primary degraded (also which close to limestone), secondary and bamboo forest in the proposed Lenya National Park in Tanintharyi. One new recorded shore bird species for Myanmar, Spectacled Spider hunter *Arachnothera flavigaster*, was recorded in the survey of FFI in 2015.

In TNR, over 75% of the area is covered by evergreen forest followed by deciduous forests, and these forests are habitats of several globally threatened plant species such as *Hopea sangal* (CR), *Parashorea stellata* (CR), *Shorea assamica* (CR) *Shorea farinosa* (CR) *Anisoptera costata* (EN), *Dalbergia cultrata* (EN), *Diospyros crumentata* (EN), *Dipterocarpus alatus* (EN), *Dipterocarpus costatus* (EN), *Shorea gratissima* (EN), *Shorea henryana* (EN), *Hopea odorata* (VU), *Memecylon grande* (VU), *Myristica malabarica* (VU) and *Schima wallichii* (VU).

The TNR hosted about 70 mammal species including several globally threatened species such as Asian elephant (EN), dhole (EN), Malayan tapir (EN), tiger (EN), clouded leopard (VU), gaur (VU), Himalayan black bear (VU), marbled cat (VU), sambar (VU) and sun bear (VU). There are more than a hundred of avifauna occurring in the TNR.

The proposed TNP is very prevalent in the mountains, and the elevation gradually rises from west to the east. The altitudes range from sea level to 1,490 m. The proposed national park mainly features evergreen rainforests followed by deciduous forests. Though a detail study for biodiversity is still lacking there have been several recordings of mammals including several globally threatened species such as the Asian elephant (EN), dhole (EN), Malayan tapir (EN), tiger (EN), clouded leopard (VU), gaur (VU), Himalayan black bear (VU), sambar (VU), and sun bear (VU). Birdlife International reported that TNP is one of the important bird areas (IBAs) of Myanmar, and TNP is one of few remaining sites for the endangered Gurney's Pitta *(Pitta gurneyi*), endemic to Thailand and Myanmar.

However, environmental degradation is another outstanding trend across the communities. Among others, soil degradation, due to shifting cultivation, appears to be immense in the area. Another casual factor to soil degradation is wildfire. Ground cover vegetation of all sorts are consumed by frequent and severe wildfires, making easily erodible soils on the steep slopes exposed directly to torrential rains and finally leading to widespread landslides and erosions. The consequence is siltation in stream system and catastrophic floods over most of the area (Technical report of TNR).

According to the Wildlife Conservation Society (WCS) report, both TNR and TNP are key biodiversity areas (KBAs) of Myanmar. In addition both areas are located within the Taninthayi range conservation corridors (NBSAP, Myanmar, 2011).

The remaining forest between Taninthayi Nature Reserve and Taninthayi national parks is still intact and covers over 8,000 km^2. This large forest block is recognized as an important corridor for the Tiger Conservation Landscape and other large mammal species such as Asian elephants, tigers, gaur, and clouded leopard. Recent surveys conducted by WSC programs in Thailand and Myanmar reveals that these mega-fauna use the forest blocks as migration routes between fragmented protected areas both in Thailand and Myanmar. Thus, the Taninthayi Range between Myanmar and Thailand plays an important role as a trans-boundary biodiversity corridor. Long-term viability of biodiversity in the Tenasserim Range not only depends on effective management of protected areas in Myanmar and Thailand but also effectively manages the Taninthayi Range landscape in a sustainable manner.

The world's smallest mammal, Kitti's hog-nosed bat (*Craseonycteris thonglongyai*) resides in the limestone caves of this eco-region. Recent studies indicated that this eco-region is recognized as one of the world's largest populations of Asian elephants (*Elephas maximus*) and tigers (*Panthera tigris*) survive in the forests along the border between Thailand and Myanmar. Some of the other mammals of conservation importance include several threatened species such as gaur (*Bos gaurus*), banteng (*Bos javanicus*), wild water buffalo (*Bubalus arnee*), southern serow (*Naemorhedus sumatraensis*), clouded leopard (*Pardofelis nebulosa*), common leopard (*Panthera pardus*), Malayan tapir (*Tapirus indicus*), wild dog (*Cuon alpinus*), Siamese crocodile (*Crocodylus siamensis*), and Asiatic black bear (*Ursus thibetanus*). Wildlife survey in Myanmar is limited due to lack of financial support. It is

reported that the The Taninthayi Nature Reserve reserves mammals (59 species), including tiger, elephant, tapir, leopard and bear and birds (230 species) including 11 important species such as Gurney's Pitta, one of the most beautiful bird in the world.

In the study area, mammals are known to be abundant. But, the population of some species has decreased gradually due to illegal wildlife trade by hunting and trapping. Some animals form a source of food for the local communities. However, there is the indirect protection of wildlife species in some areas of Tanintharyi Township because of the control of the Karen National Union (KNU). Thein Khun Reserved Forest region is under the control of KNU and the hunting of endangered wildlife is banned in the area. Most people adhere to this ban since the KNU may use force when a hunter is discovered.

In Tanintharyi Township, there were palm oil companies in the area during the past decades which logged trees for establishing large-scale palm oil plantations. They had constructed many roads and this makes hunting in the jungle more convenient for the hunters. Taking advantages of this network of roads, hunting activities have increased. In addition hunting has increased because employees of these logging companies settled in the area and involved in extraction of resources.

All the found species in this study were 17 species. The interesting mammals were Wild Elephants (*Elephas maximus*) which were commonly seen in the border areas between Tanintharyi Township and Boakpyin Township.

Some large mammals known from camera traps were Asian Black Bear (*Ursus thibetanus*), Leopard (*Neofelis nebulosa*), Leopard Cat (*Prionailurus bengalensis*), Stumped Tailed Macaque (*Macaca arctoides*), Wild Boar (*Sus scrofa*) and Malayan Tapir (*Acrocodia indica*). In addition, Large Indian Civet (*Zibetha indica*), Marbled Cat (*Pardofelis marmorata*), Red Muntjac (*Muntiacus* muntjak), Malayan Procupine (*Hystrix brachyuran*), Lesser Mousedeer (*Tragulus kanchil*), Large Toothed Ferret Badger (*Melogale personata*), Yellow Throated Marten (*Martes flavigula*), Red Jungle Fowl (*Gallus gallus*), Great Argus (*Polyplectron bicalcaratum*) and Fea's Muntjac (*Muntiacus feae*) were known from camera trap photos.

There were 32 bird species recorded in this survey conducted during 2019 (Table 3). They included Hair Crested Drongo, Common Hill Myna, Blacked Naped Oriole, Chestnut Breasted Malkoha, Oriented Pied Hornbill, Taiga Flycatcher, White-throated Kingfisher, Blacked Thighed Falconet, Spotted Dove, Red Breasted Parakeet, Asian Fairy Bluebird, Common Kestral, Greater Flameback Female, Red Wattled Lapwing, White Billied Woodpecker, Greater Racket Tailed Drongo, Black Crested Bulbul, Dollar Bird, Blue Rock Thrush, Black Shoulder Kite, Collared Falconet, Long-tailed Shrike, Great Hornbill, Ashy Drongo, Pale Blued Flycatcher, White Bellied Munia, Bronzed Drongo, Plain Prinia, Refuscent Prinia, Tiger Shrike, Thick Billed Green Pigeon (Male) and Vernal Hanging Parrot.

1.2 Origin and problem

An important question for the effective and sustainable conservation of biodiversity is whether national capacity and resources will be sufficient enough to ensure the active participation of all stakeholders. Myanmar has been regarded as one of the most biodiversity rich countries in the Asia-pacific region, but biodiversity resources

have been dwindling for many years due to the lack of integrated capacity and necessary resources for the sound protection and management of biodiversity.

The Taninthayi Range along the border between Myanmar and Thailand has been recognized as a global important terrestrial eco-region containing some of the highest diversity of both bird and mammal species found in the Indo-Pacific region. However, the outstanding biodiversity features of the Taninthayi Range have been reduced and threatened due to lack of capacity and necessary resources to ensure the effective conservation of biodiversity.

In this regard, the key problem to be addressed by the project was identified as ineffective conservation of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar. The key problems include (a) lack of capacity and resources to promote the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar; (b) lack of mechanisms for transboundary biodiversity conservation in the Taninthayi Range in Myanmar; and (c) lack of the effective participation of local stakeholders in the conservation in the Taninthayi Range in Myanmar.

Lack of capacity and resources: In Myanmar, there is a significant gap to conserve, manage and monitor biodiversity resources in the Taninthayi Range due to limited capacity and resources. For instance, Nature and Wildlife Conservation Division (NWCD) of the Forest Department is the main counterpart of the biodiversity conservation. For biodiversity conservation purpose, NWCD has been trying its best to expand Protected Area System (PAs) up to 10 percent of the total country's area so that numbers of PAs are increasing overtime.

Likewise, Forest Research Institute (FRI) is also responsible to conserve biodiversity at least research scale and FRI is focusing on flora of Myanmar. However, both Institutions have many limitations including capable human resources and financial limitations.

In order to address this capacity building and human resources related issues, one of the project activities aims at providing necessary trainings, facilities and equipment while raising biodiversity experts at the national forest research institute level.

Park rangers and management staff of protected areas as well as FRI researchers have limited trainings and exposures in effective patrolling, biodiversity assessment, monitoring and conservation, stakeholder consultations and park management.

Other compounding factor is that technical and professional staff at regional and central levels also has their limited understanding of how to use systematic baseline data for, particularly, trans-boundary biodiversity conservation.

In addition, there is increasing evidence on extensive encroachment and overexploitation of biodiversity resources due to poaching, fragmentation and encroachment for agriculture, illegal and legal logging, settlements inside and around the park, and human-elephant conflicts.

Furthermore, the following issues are also being faced in biodiversity conservation:

Poaching - Commercial and subsistence poaching and selling of wildlife products through cross-border trade, thus wildlife numbers have been depleted by past

hunting and poaching activities. With active involvement of Wildlife Conservation Society (WCS) in the Smart Patrol program in the last three years, field observers feel there is still some subsistence poaching but not large scale market hunting.

Fragmentation and Encroachment - Increased habitat fragmentation as a result of agricultural activities, particularly around enclave communities because Karen minority still practice land rotation or shifting cultivation but the rotation period is shorten due to strict law enforcement. In addition, scattered large scale encroachments for rubber plantation are observed to date along the boundaries. In addition, the Taninthayi Range is located within the GMS economic corridors. Therefore, more fragmentation is anticipated from the infrastructure development project.

Illegal and legal logging – Small scale illegal logging is observed. Meanwhile, after Thailand banned timber exploitation in its forests in 1988, Myanmar granted large logging concessions to Thai companies, and illegal timber extraction in Myanmar by Thai loggers has become common in recent years.

Settlements inside and around the park – A majority of the total population practice is in agriculture and still enlarge their land whenever they have opportunities to do so. These lead to increased population, encroachment, pollution and wildlife impacts. Land use planning and demarcation are essential to minimize current and unforeseen impacts through patrolling and clear demarcation.

Forest fires- Forest fires and repeated burning lead to permanent ecosystem degradation.

Human-elephant conflict - There has been human-elephant conflict in the proposed project area where elephants invade agricultural crops.

Lack of mechanisms for trans-boundary biodiversity conservation: The effective transboundary biodiversity conservation in the Taninthayi Range requires a considerable degree of cooperation between Myanmar and Thailand. Although the transboundary biodiversity conservation initiative has been proposed by Myanmar, there is no coordinating institutional mechanism between Myanmar and Thailand to ensure the effective management of wide-ranging species in the Taninthayi Range. There is no comprehensive and detailed information on the locations of important habitats for selected wide-ranging species as a framework for coordinating activities to conserve transboundary biodiversity in the Taninthayi Range.

The project aims at establishing an initial institutional arrangement between the Forest Department of Myanmar and the Royal Forest Department and the Department of National Park and Wildlife Conservation of Thailand to support the development of long-term transboundary cooperation in the Taninthayi Range. This will be facilitated through the participation of representatives of the Royal Forest Department and the Department of National Park and Wildlife Conservation of Thailand in meetings of the Project Technical Committee and Project Steering Committee which meet regularly to review the implementation of the project. Joint researches between scientists in the two countries in biodiversity surveys in the Taninthayi Range are also expected to provide various opportunities to draw the attention of decision makers to the importance of developing transboundary biodiversity conservation programs. Such joint research will also provide a good opportunity to share experiences and lessons from the implementation of biodiversity

projects in the two countries towards the development of transboundary cooperation partnerships.

Lack of the effective participation of local stakeholders: The effective conservation in the Taninthayi Range in Myanmar depends totally on the proactive participation of local stakeholders and the provision of sustainable livelihoods of forest-dependent local communities. In particular, there is an urgent need to facilitate the intensive implementation of community-based natural resource management activities in the Taninthayi National Park and its surrounding areas as there has been a long delay in establishing it as a fully functional protected area in collaboration with local communities. There have been limited good practices on the co-management of a protected area with local communities in the country due to different interests and concerns among local stakeholders. A weak capacity of local community organizations has created some problem in consensus building in natural resource conservation and management. Local capacity building is an important task of the project.

Since most of the local communities rely on natural resources for their subsistence, Project intervention includes Integrated Conservation and Development Program and Community Livelihood Development Program activities, including nature-based tourism interventions as well as other promising income-generating opportunities. Concerted efforts are required to strengthen the long-term viability of the livelihood initiatives which have been introduced by establishing closer program linkages with civil society, including non-governmental organizations (NGOs).

2. Projective Objectives and Implementing Strategies

2.1 Development Objective:

The development objective is to contribute to the long-term cooperation of Myanmar and Thailand for the transboundary biodiversity conservation in the Taninthayi (Tenasserim) Range in Myanmar.

2.2 Specific objective

The specific objective of the project is to promote the sustainable conservation and management of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar.

The outcome indicators are:

- By the end of the project, at least two institutional mechanisms for transboundary cooperation between the two countries will be established at the central government, and research institute/scientific research level.
- Before the end of the second year of the project, information is collected and exchanged between the two countries on wildlife distribution and applied in joint research activities.
- Before the end of the second year of the project, maps indicating the habitats of five key wide-ranging landscape species in the Taninthayi Range landscape are produced.

- ❖ Before the end of the second year of the project, biodiversity conservation division is established in the FRI and the number of their research papers on biodiversity is increased to 50% compared to the year one of the project.
- ❖ Before the end of the third year of the project, the establishment of the Taninthayi National Park in Myanmar in a fully operational protected area.
- ❖ The number of Myanmar park officials and management staff in the TBCA is increased to 30% compared to the before the project.
- ❖ Local community livelihood has increased by 50% compared to the before the project.

2.3 Implementing strategies

The project strategy included strengthening capacity of national institutions in particular the Forest Research Institute and NWCD for conducting various researches for biodiversity conservation, management and monitoring, engagement of relevant stakeholders, awareness raising and livelihood improvements of the local communities. The Project works with local forest department as well as local CSO, NGOs and communities for the effective implementation of the transboundary biodiversity conservation as well as to increase the quality of project outcomes and publications.

Key strategies that are to be conducted include ecosystem management, biodiversity corridor, local livelihood improvement, multi-stakeholder participation at all levels, capacity building and sharing lessons learned.

Capacity building and sharing lessons learned: After strengthening of the biodiversity conservation and management of the national institutions in particular the Forest Research Institute, NWCD and local Forest Department, a series of training sessions were conducted to increase the capacity of project staff, rangers, border patrol police, and local communities. In addition, necessary equipment (e.g., GPS, hand compasses, cameras and camera traps) were allocated to protected area staff and local staff for strengthening on-going monitoring system. The provision of the training was especially important in Myanmar, where staff have little or no access to training, budgets for management are very small, and there are very few rangers and facilities on the ground.

The capacity-building strategies of the project included hands-on-training and sharing lessons learned about protected areas management, smart patrol and wildlife monitoring from experts. This approach reflected in the joint research on wildlife distribution, which will provide a practical platform for not only strengthening trans-boundary cooperation, but also developing hands-on-training. Engagement of WCS-Myanmar, FFI and local NGOs in project implementation was enhanced as they have accumulated a lot of biodiversity conservation in the project site.

Ecosystem management and biodiversity corridors: The outstanding biodiversity features and cultural diversity of the Taninthayi Range are vulnerable. This is due to the fact that much of the forest remaining in Myanmar remains unprotected and is vulnerable to logging and clearance for agriculture. In addition,

existing protected areas in Myanmar are not sufficient to maintain viable of mega-fauna populations like Asian elephant and tiger. Meanwhile, trasnboundary biodiversity conservation in the past was stand alone and with a lack of cooperation among relevant stakeholders as well as two countries.

Therefore, long-term viability of biodiversity in the Taninthayi depends on effective biodiversity conservation and establishing more protected areas along the borders and considering the remaining forest cover in the Taninthayi Range as one ecological unit as outlined in the ecosystem management approach. This approach is defined as a process that aims to conserve major ecological services and restore natural resources while meeting the socioeconomic, political and cultural needs of current and future generations. The project team putted all efforts into effectively managing ecosystems and engaging in conservation efforts especially for three ecological functions: a) conserving habitat for species movement and for the maintenance of viable populations, b) conserving and enhancing ecosystem services, and c) promoting and enhancing local community welfare through the conservation and sustainable use of natural resources.

Local livelihood improvement: Local peoples mainly rely on natural resources for their livelihood. The Integrated Community Development Program (ICDP) was initiated, and nature-based tourism activities were recommended in some areas to increase livelihood opportunities for local residents in order to reduce pressures on the use of forests to support subsistence on agricultural practices.

Concerted efforts were extended in the Project site to strengthen the long-term viability of the livelihood initiatives which have been introduced by establishing closer program linkages with civil society, including non-governmental organizations (NGOs). Co-management with local communities and provisions of tangible benefits to rural inhabitants are among the mechanisms advocated to reduce conflicts.

Multi-stakeholder participation at all levels: In addition to encouraging local NGOs to share development experiences and provide support to ICDP activities through the project, academic, researchers and local NGOs at regional and national levels were involved with providing some capacity building training.

Due to the limited capacity and human resource, the Project provided several opportunities for researchers, local staff and local communities to participate in joint collaborative activities and training programme. These will include shorter-trainings for selected staff for collecting baseline information on wildlife distribution and effective patrolling (Smart Patrol) in the Taninthayi Hills and the adjoining forest areas, and will include participation in research on wide-ranging species with the support of the project teams.

2.4 Assumptions and risks

The ultimate success of the project depends on the continued shared commitment and political will of Myanmar and its associated stakeholders to trans-boundary biodiversity conservation. That commitment and political will is reflected in several international and regional mechanisms, including the Greater Mekong Subregion (GMS) Working Group on Environment (WGE), the ASEAN Blueprint 2015, and the Mekong River Commission. Those mechanisms and the lessons learned from the

Emerald Triangle Protected Forest Complex project lessen the risk of weakening that commitment and political will by providing a catalytic mechanism to guide the establishment of an appropriate environmental policy for the planning and execution of trans-boundary agreements. Moreover, Myanmar has ratified a number of international conventions related to biodiversity and the environment and each of the countries is committed to the United Nations Sustainable Development Goals (SDG) to eradicate poverty and ensure environmental sustainability especially SDG 13 and SDG 15, as well as to the 2020 biodiversity target to significantly reduce the current rate of biodiversity loss at global, regional and national levels.

One of the critical underlying assumptions of the project is that the executing agency will provide qualified staff to participate in project activities, both at national and local levels, especially with regard to the collaborative research that is planned to be conducted on wide-ranging wildlife species distribution. It is anticipated, as well, that the involvement of local NGOs (eg. WCS, FFI) in Myanmar and other donors to sustain ICDP and wildlife monitoring activities will increase the livelihoods of local communities and reduce their dependence on natural resources, and obtain occurrences of important wildlife in the Taninthayi Range, respectively.

The most significant risks that might impact on the effective implementation of the project, as well as mitigating actions to counteract those risks, include the following:

- Conflicts along the border of Myanmar between Myanmar's army and minority groups might arise so that park rangers, staff members of Forest Department and scientists are too alarmed to visit project sites. These are also external risks over which the project has little or no control, but their impacts might be mitigated to some extent by understanding that their occurrences are irregular and oftentimes transitory and by redoubling project efforts during those periods so that they are inactive. Currently, National Ceased-Fire Agreement (Signed NCA) between Myanmar government and minority groups has been signed in the northern part of proposed project site. It is believed that NCA will be extended to cover all areas.
- The government agencies responsible for executing of the project (FD, MOECAF) might be unable to provide sufficient incentives for the staff to commit themselves to the project or they may be unable to provide adequate resources to the proposed Project to ensure effective protection and management. Its mitigation actions will take place by reviewing the terms of references for the PSC and the PTC and other bodies by ensuring that the most industrious, responsible and committed staff of those agencies are assigned to the project.
- Significant infrastructure may be developed under the GMS Economic Corridor Development as well as Belt and Road Initiative (BRI) programme which would fragment and damage critical ecosystems in the Taninthayi Range. This is also an external risk over which the project would have little control, but its impacts might be mitigated to some extent by efforts to influence the location of infrastructure development and restrict such development to the greatest extent possible to less critical areas of wildlife habitat that are located outside of primary animal migration paths. The

GMS/Environmental Operation Center (EOC) developed strategic environment framework to lessen those impacts.

- Some local communities might choose to not actively participate in either ICDP livelihood activities, but rather cling to clearing forest to support unsustainable agricultural practices and large scale rubber plantation. The impacts of this risk will be mitigated by screening procedures intended to exclude more disinterested communities as part of the Sustainable Livelihood Assessments and regular monitoring that will be conducted. In addition, the livelihood improvement program to minimize or give up the poaching, illicit logging, unsustainable agricultural practices etc. may not be accepted by local communities.
- Market incentives might be too strong for local communities to abstain from forest encroachment and unsustainable agriculture practices. The impacts of this risk would be mitigated by ensuring that the ICDP activities respond to local communities 'income requirements, as reflected in the Sustainable Livelihoods Assessments that are conducted in Myanmar, to the greatest extent possible.
- Project activities might not be implemented as scheduled in the work plan because of the complexities of administrative procedures and regulations. The impacts of these risks would be mitigated by recognizing that impediments such as those that are not necessarily uncommon, anticipating the timing of their potential occurrences, and redoubling efforts during more productive periods of project implementation to ensure that the activities that are described in the work plan are implemented as envisioned in the project document.

3. Project Performance

3.1 Specific objective

The specific objective of the project is to promote the sustainable conservation and management of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar.

The following outputs were identified to achieve the specific objective to promote the sustainable conservation and management of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar.

Output 1: Capacity building of national institutions to design and implement the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar.

Output 2: Establishment of initial institutional mechanisms for the transboundary biodiversity conservation in protected areas, in the Taninthayi Range.

Output 3: Strengthening of local stakeholder participation and livelihoods of forest-dependent local communities in the Taninthayi National Park and its surrounding areas.

Output 1: **Capacity building of national institutions to design and implement the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar.**

Activity	Description of activities
A 1.1	Establish and conduct Project Steering Committee (PSC), Project Technical Committee (PTC) and other technical coordination bodies to ensure the effective transboundary biodiversity conservation
A 1.2	Organize training courses in biodiversity conservation, GIS mapping, land-use planning, forest management planning and habitat suitability analysis
A 1.3	Provide necessary equipment and facilities to conduct sustainable biodiversity conservation, management, monitoring and research activities in the Taninthayi National Park and the Forest Research Institute
A 1.4	Develop technical guidelines for restoration, management, conservation and monitoring in the national language
A 1.5	Establish and implement regular patrolling systems in the Taninthayi National Park and its surrounding areas with conduction of training courses

Output 2: **Establishment of initial institutional mechanisms for the transboundary biodiversity conservation in protected areas, in the Taninthayi Range.**

Activity	Description of activities
A 2.1	Establish institutional mechanisms for the transboundary biodiversity conservation in the Taninthayi Range
A 2.2	Conduct base line survey on biodiversity and socio-economic and study on economic valuation of ecosystem services research in Taninthayi National Park
A 2.3	Develop and promote community-based conservation programs to support the transboundary conservation of the Taninthayi Range
A 2.4	Organize national and regional workshops on transboundary biodiversity conservation with relevant stakeholders in collaboration with regional and international organizations
A 2.5	Widely disseminate the outcomes, experiences and lessons from the implementation of the project to interested parties and at relevant national, regional and international events
A 2.6	Publish the results of joint research findings in relevant national/regional/international journals

Output 3: **Strengthening of local stakeholder participation and livelihoods of forest-dependent local communities in the Taninthayi National Park and its surrounding areas.**

Activity	Description of activities
A 3.1	Raise awareness of local communities on the importance of biodiversity for their sustainable development through communication, education and public awareness (CEPA) program in TNP
A 3.2	Plan and conduct a comprehensive sustainable livelihoods assessment, a potential eco-tourism development assessment, and a training needs assessment
A 3.3	Provide training in plantations, sustainable agro- forestry, the promotion of selected non-timber forest products development, and community-based ecotourism
A 3.4	Scale up local community organizations and networks and community forestry to facilitate biodiversity conservation, forest fire protection and avoid illegal activities in the proposed Taninthayi National Park and its surrounding areas

It is important to note that the original plan of the Project period was 36 months with the total budget of USD 1,939,045. However, due to the financial constraints of the ITTO, The Project was divided into two Stages (Stage I with budget of USD 599,962 and Stage II with the budget of USD 1,339,083). Again, financial limitation was not yet solved so that ITTO decided to support as the Phase I of the Project Stage I, with the budget of USD 140,000 for two years. Shorting the project period and financial limitations reflected the planned activities. Especially, the Phase I of the Stage I project, entitled, Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Taninthayi Range in Myanmar (Phase I, Stage I) (PD 723/13 Rev.2 (F)) focused mainly on the capacity building of the relevant stakeholders and research activities related to transboundary biodiversity conservation. The Project was not able to implement the establishment of institutional mechanisms for transboundary cooperation between the two countries government, (Myanmar and Thailand) and research institute/scientific research level. Agreed Workplan and activities have been implemented during the Project period.

Schedule

- Starting date: 1st April 2018 to 31st December 2019
- Duration: 24 months

Total amount of expenditure

- ITTO's support = $ 140,000
- Contribution of Govt. of Myanmar (in kind) = $ 7,200

4. Project outcome, target beneficiaries involvement

4.1 Project outcome

The Project Outcome is the effective establishment of trans-boundary biodiversity conservation area in the Taninthayi Range that enhances habitats for a wide-range of wildlife species and facilitates migration and log-term survival of large mammals.

In order to achieve the outcome of the Project, the following actions were implemented:

- National capacity and necessary resources for biodiversity conservation management and research in the Project area are substantially increased through organizing series of technical trainings for the staff of local Forest Department, staff of NWCD and local communitie as well as village consultation process, village development zonation, and community-based natural resource management (CBNRM) with the support of national NGOs like WCS, FoW etc. Myanmar.
- Furthermore, capacity of biodiversity research of FRI is increased through formulating and implementing long-term research plan focused on biodiversity conservation especially plant diversity (Flora of Myanmar).
- Park rangers and field level staff of Forest Department in Project areas as well as those who are working in border areas (eg. Kachin State, Kayah State, Kayin State, Chin State, Taninthari Region) have been trained and will have learned to use more effective tools in patrolling and in collecting data. Technical and professional staff at regional and central levels are also increased their understanding of how to use systematic baseline data for trans-boundary biodiversity conservation through technical and workshop.
- Sustainable livelihoods of forest-dependent local communities have been enhanced to support the conservation of biodiversity in the project site with strengthening of local community organizations and networks. Community-based natural resource management activities have been intensively implemented in the Taninthayi National Park and its surrounding areas. Local communities have gained additional knowledge of alternative income-generating activities. Their livelihoods were improved and they will be less dependent on forest resources.
- Initial coordinating institutional mechanisms with neighboring country, Thailand was planned to implement the the effective management of wide-ranging species in the Taninthayi Range.

However, the Project was not able to implement the establishment of institutional mechanisms for transboundary cooperation between the two countries government, (Myanmar and Thailand) and research institute/scientific research level. Agreed Workplan and activities have been implemented during the Project period.

It is because, as explained earlier, the original plan of the Project period was 36 months with the total budget of USD 1,939,045. However, due to the financial constraints of the ITTO, The Project was divided into two Stages (Stage I with budget of USD 599,962 and Stage II with the budget of USD 1,339,083). Again,

financial limitation was not yet solved so that ITTO decided to support as the Phase I of the Project Stage I, with the budget of USD 140,000 for two years.

Shorting the project period and financial limitations reflected the planned activities. Especially, the Phase I of the Stage I project, entitled, Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Taninthayi Range in Myanmar (Phase I, Stage I) (PD 723/13 Rev.2 (F)) focused mainly on the capacity building of the relevant stakeholders and research activities related to transboundary biodiversity conservation.

Nonetheless, the impact indicators after the project implementation include

- Areas of critical habitats available to sustain viable populations of wide-ranging species in the Taninthayi Range are maintained and enhanced in the context of promoting transboundary conservation.
- A common vision for the conservation of transboundary biodiversity conservation in the Taninthayi Range is implemented with the establishment of management measures to protect wide-ranging species, especially five key landscape species.
- Institutional arrangements for transboundary biodiversity cooperation will be enhanced after project completion at least 10 years more.

4.2 Target beneficiaries involvement

The Executive Agency, Forest Department, has played a key role in designing the project activities by intensively reviewing the effective engagement of beneficiaries.

For example, local communities involved in the project activities related with biodiversity conservation, capacity building, and various extension activities. Local communities also engaged in village consultation process such as natural resource listing, mapping, collecting socio-economic information and data and awareness raising activities to ensure their full and effective participation.

In the process of village development zonation, village area and boundary surveys and village land use planning were carried out in close collaboration with local communities in order to establish community-based natural resource management systems including participatory boundary demarcation of the village and village level land use plan development as well as establishment of minor forest product nurseries and pilot income generation programs.

UFES and Central Forestry Development Training Centre (CFDTC), Myanmar Forest School (MFS) and Myana Timber Enterprise (MTE), Environmental Conservation Department (ECD) involved in the provision of scientific data, development and promotion of technology required for operational biodiversity conservation in the area, various assessment and development of monitoring system, resource base inventory etc. Local authorities engaged in the coordination mechanism among stakeholders.

Nature and Wildlife Conservation Division and Planning and Statistic Division of the Forest Department engaged the project management and monitoring leading role towards its success in accordance with the rules and procedures of ITTO as well as the Government's rules and regulations. Nature and Wildlife Conservation Division

and Planning and Statistic Division also facilitate the effective participation of key stakeholders in implementing project activities relating to national and regional workshops and community consultation and participation in transboundary biodiversity conservation. They also contribute to identify lessons from the implementation of the project for their wider dissemination to a similar project case as well as formulation and revision of biodiversity conservation policy at the national local level as a mainstream process.

The Wildlife Conservation Society-Myanmar and other conservation NGOs like Flora and Fauna International (FFI), Friends of Wildlife (FoW), which have accumulated a lot of experiences and lessons from the implementation of various conservation and management activities in protected areas around the country. National institutions, such as FRI and University of Forestry and Environmental Science, participated in consultation meetings organized by Forest Department and they identified a critical research area and necessary equipment and facilities to enhance biodiversity conservation, management and monitoring. Communications with local governments and NGOs have been made to identify more feasible project activities to ensure the effective participation of local communities and development and income generating activities.

4.3 Achievement of the project objectives

The specific objective of the project is to promote the sustainable conservation and management of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar by elaborating the following outputs:

Output 1: Capacity building of national institutions to design and implement the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar.

Output 2: Establishment of initial institutional mechanisms for the transboundary biodiversity conservation in protected areas, in the Taninthayi Range.

Output 3: Strengthening of local stakeholder participation and livelihoods of forest-dependent local communities in the Taninthayi National Park and its surrounding areas.

In order to achieve the set objectives and expected outputs, the following activities were implemented, in accordance with the agreed Workplan:

4.3.1 Workshops

No.	Workshop Title	Date	No. of participants	Venue
1	Project Inception Workshop	24-8-2018	32	Auditorium, Forest Research Institute, Yezin
2	Consultation workshop on promoting biodiversity conservation in trans-boundary areas	26-6-2019	34	Auditorium, Forest Research Institute, Yezin

3	Regional-level Workshop on promoting trans-boundary Biodiversity Conservation in Tanintharyi Range	26-9-2019	31	Green Eyes Hotel, Myeik, Tanintharyi Region
4	Project Completion Workshop	20-3-2020	55	Auditorium, Forest Research Institute, Yezin

4.3.2 Trainings

No.	Training Title	Date	No. of participants	Venue
1	SMART training for local communities in Taninthayi Township	5th -7th September, 2018	33	Forest Plantation Camp, Chaung Naut Pyan Village, Tanintharyi Township
2	Training on agroforestry and livelihood development activities for local communities	9th- 11th September, 2018	25	Forest Plantation Camp, Chaung Naut Pyan Village, Tanintharyi Township
3	Biodiversity conservation, Protected areas and habitat management training for local forest staff	19th-21st September, 2018	30	Popa Mountain Park, Mandalay Region
4	Bamboo-based handicraft training for improving local livelihood in Taninthayi Township	25th March-4th April, 2019	14	Chaung La Mu Village, Tanintharyi Township
5	Training on agroforestry and livelihood development activities for local communities	9th- 11th September, 2018	21	Forest Plantation Camp, Chaung Naut Pyan Village, Tanintharyi Township
6	SMART patrolling training for FD Staff	21st – 23rd August 2019	25	Forest Research Institute, Yezin, Nay Pyi Taw
7	Training on development of Community-based Ecotourism for local communities	23rd – 25th September 2019	22	Royal Blossoms Hotel, Tanintharyi Town
8	Biodiversity conservation, Protected areas and habitat management training for forest staff	25-27 Nov 2019	20	Popa Mountain Park, Mandalay Region

4.3.3 Meetings

No.	Consultation Title	Date	No. of participants	Venue
1	Consultation meeting with stakeholders of the project to identify target areas and target local communities	8-9-2018	50	Meeting room of Department of General Administration
2	Consultation meeting on preparation of community-based natural resources management plan	2-12-2018	39	Chaung Naut Pyan Village, Tanintharyi Township
3	Consultation meeting with stakeholders for promoting Trans-boundary biodiversity conservation	3-12-2018	23	Royal Blossom Hotel, Tanintharyi
4	Consultation meeting on community- based natural resources management plan	30-3-2019	21	Chaung Naut Pyan Village, Tanintharyi Township
5	Consultation meeting on Strengthening Community-based conservation Organization	27-9-2019	33	Green Eyes Hotel, Myeik
6	Consultation meeting on provision of community-based natural resources management plan	6-3-2020	35	Chaung Naut Pyan Village, Tanintharyi Township

4.3.4 Extension activities

Eight (8) public education talks about role of forests in biodiversity conservation, climate change mitigation and adaptation, soil and water conservation, livelihood improvement etc., were organized in the villages of the Project Site. The Project also jointly organized International Day of Forests 2019 with other partners and Projects being implemented by the Forest Department.

4.3.5 Social Development Activities

In order to promote people awareness and subsequently enhance their participation on trans-boundary biodiversity conservation, the project involves social development activities as one of the project activities. In the described project area, the project support furniture, books, stationaries, and other utensils to elementary and middle

education schools, and village development councils, together with organizing education talks.

4.3.6 Publications

4.3.6.1 Knowledge Materials

The following knowledge materials are published during the Project period to provide the general knowledge of forest and ecosystem services:

- Forests and Water
- Forests and Energy
- Forests and Sustainable Cities

4.3.6.2 Invasive Alien Species in Myanmar

This book was prepared in Myanmar language. In this book, almost all invasive alien species including plant species, aquatic animal species and insect species were described and control measures were also included.

4.3.6.3 Handbook of Lesser-Used Timber Species and Some Commercial Species of Myanmar

In collaboration with ITTO-supported Project, namely, "Enhancing Conservation and Sustainable Management of Teak Forests and Legal and Sustainable Wood Supply Chains in the Greater Mekong Sub-region (PP-A/54-331) (Myanmar)", the Project revised and re-printed the booklet "Handbook of Lesser-Used Timber Species and Some Commercial Species of Myanmar" which was published in 2000 by the support of the Project, namely, "Introducing Myanmar's Lesser Used Timber Species to the World Market" (ITTO Project PD 31/96 Rev.2 (M.F.I)) jointly implemented by the Forest Research Institute, Forest Department and International Tropical Timber Organization (ITTO) from 1997-2000. It has been over two decades of project termination of the said Project ((ITTO Project PD 31/96 Rev.2 (M.F.I)) and no copies of the booklets were left at the Forest Research Institute, Forest Department. The booklet is still very helpful for the development of wood-based industries as well as for the students, teachers, researchers and private sectors. This re-printed version includes properties and relevant photos of additional 20 commercial tree species.

4.3.6.4 Technical Reports

During the project period, the researchers, Project Staff members and local staff of Forest Department conducted the research activities and the following technical reports were prepared in consultation with researchers and relevant stakeholders:

No.	Report	Brief Description
1	Socio-economic assessment	Socio-economic assessment was conducted in SEVEN villages (Border Area) in Taninthari Township. Based on the set Criteria, seven villages,

No.	Report	Brief Description
		namely, Thein Kone, The Phyu, Chaung Nauk Pyan, Aye Thayar, Ye Phyu, Tamote Chone, Le Taw Ya villages were selected and conducted the socio-economic assessment.
2	Biodiversity survey: tree species diversity	Forest inventory and flora surveys were conducted in the project area to provide the fundamental information of developing forest management plans. We arbitrarily laid out 15 sample plots (30 m × 30 m) across those study sites. In each sample plot, diameter at breast height for all trees (≥ 5 cm in DBH), and top height (in meters) were measured while counting the number of those stems. In total, there are 940 individuals occupied by 67 species occurred in 29 families for all sample plots. The results of family composition show that those forests are relatively tropical evergreen forests. The Shannon diversity index value showed higher diversity for the study sites (3.498) while the typical values are generally between 1.5 and 3.5 in most ecologically studies. The value of Simpson diversity index (1-D) was 0.959 indicating the higher diversity values and possessing less single most dominant species in this area. According to the stem-diameter distribution pattern, the highest number of stems was found in the smallest diameter classes meaning the highest proportion of small trees in the forest. However, the diameter distribution curve did not follow the inverse-J shape which is the typical form of undisturbed natural forests. According to this finding, we can prove that those forests have been disturbed especially anthropogenic disturbances such as logging, pole cutting, etc., in previous time. But it seems there is still no disturbance at this current time.
3	Biodiversity survey: wildlife survey	Fifty Six (56) camera traps were set up in the natural forests of Tanintharyi Township with the technical support of Chinese Academy of Science (CAS) which is also collaborating with FRI. In total, about 30 wildlife species have been found by the images including clouded leopard, wild boar, red muntjac, Asian black bear, etc. The bird survey was also included by learning the bird species occupied in the various types of microhabitats. Focused group discussions were conducted in seven villages to note down the list of wild animals in the past and present, to score the most important wild animals and disappeared animals, and causes of

No.	Report	Brief Description
		their extinction. Elder persons and knowledgeable persons were invited during the discussions.
4	Survey on non-timber forest products	Primary data was collected by means of questionnaires surveys combined with face-to-face interviews. In total, there were 107 sampled respondents from six villages belonging to two village tracts. About 49% of the respondents owned farmlands less than 5 hectares while the rest own farmlands more than 5 hectares. we found out that people in this area are mostly dependent on production of agricultural products from their orchards as their main income source. Although they use NTFPs, they did not produce and trade in the markets as commercial products. Consequently, we could not count monetary return for extraction of NTFPs by local people in this area as their utilization pattern is rather subsistence scale. Accordingly, we collected the traditional knowledge of local people in using NTFPs in this current research as ethno-botanical information. In this area, there are varieties of bamboo and rattan species used by local people. We found out that local people utilized varieties of non-timber forest products for multiple purposes including food, medicinal plants, firewood, and different apparatus. They usually collect those NTFPs from the nearby natural forests. The NTFP categories include seeds, fruits, roofing materials, leaves, rhizomes, stems, roots, mushrooms and medicinal plants. Hence, the results show that NTFPs contribute the livelihood security of the people in this study area as subsistent skill.
5	Analysis of forest cover change in Taninthari Region to the application of Wildlife Conservation	Land use and land cover change is a major force of ecological change in tropical regions. The pattern and process of deforestation and forest degradation have thus received considerable attention in biodiversity conservation planning, ecological, socioeconomic, and policy studies to support effective management mechanisms. Realizing the need to provide information on the present status of forest cover change and deforestation rates of the past and present in the region and identify major land use and cover change areas for Tanintharyii region, Remote Sensing and GIS section of Forest Department conducted monitoring of land use and land cover of in and around Tanintharyii Region and creating wildlife corridor using 2005 Landsat 7 ETM, 2010 IRS Liss 3 and 2015 Lansat 8 imageries. And deforestation and forest degradation analysis was

No.	Report	Brief Description
		conducted by two areas; whole Tanintharyii Region, wildlife corridor by creating 10 km buffer area of sample villages. The results revealed that although rates of deforestation and forest degradation were decreasing within Tanintharyii area, southern Myanmar, the rates were increasing within 10 km buffer area of sample villages.
6	Carbon Storage Potential and its relation to Stand Structure of Natural Forests in Tanintharyi Township, Tanintharyi Region	The main objectives are to investigate the aboveground carbon storage potential of forests in Tanintharyi region and to find the factors related to carbon storage of forests. The sample plots were carried out (30 m × 30 m) with stratified sampling method across the sites, covering 13,500 sq meter. According to the results, the high aboveground biomass and carbon storage potential of forests was found in the Tanintharyi region with an average amount of 411.11± 172.44 ton per ha and 193.22± 81.05 ton per ha, respectively. In dense forests with less disturbance areas, the average carbon storage showed 329.292±0.07 ton per ha. Moreover, the study highlighted that the carbon storage distribution in a forest mostly relied on the stand structure and growth of the forests although elevation and soil properties were the associated factors.
7	Species distribution patterns influenced by edaphic factors in Natural Forests of Tanintharyi Township	Soil and vegetation are complexly interrelated so the growth and reproduction of terrestrial ecosystems such as forests cannot be understood without knowledge about the soil. Therefore, we examined the influences of topography and edaphic factors on species composition and distribution so that the research results are to be able to support integrated and sustainable management of the forests in Tanintharyi Mountain Ranges.). In the sample quadrats, soil samples were collected from two layers (0-10 cm, and 10-20 cm). For each bundle of soil sample, physical and chemical properties were analyzed. The strong species-environment correlations of the CCA (Canonical Correspondence Analysis) ordination indicate that most of the variation in species composition and distribution between stands is explained by the environmental variables used in this study.

4.4 Project sustainability

Mainstreaming of the project activities is the most appropriate approach for the project sustainability. At the project completion workshop, the Project Management Team discussed and shared lessons learned from the implementation of project activities. Lessons learnt included principles of transboundary biodiversity conservation, plant, wildlife and bird biodiversity of the transboundary area (particularly targeted project site). Furthermore, the Project Management Team also shared status of socioeconomic and livelihoods of the local communities, perspective of the local people on the role of forests and biodiversity, availability of non-timber forest products in the Project area and market potential and land use and land cover changes in the Taninthari Region with special emphasis on tranboundary areas. Transboundary biodiversity conservation requires strong institutional arrangement and good coordination mechanism in the transoundary areas. The Project Management Team worked together with NGOs, line Ministries, local communities, private sector (eg. forest plantation owners, oil palm plantation owners) and Community Forestry User Groups. However, the Project Management Team did not start the coordination mechanism between neighboring country, Thailand because the Project is just a Phase I of Stage I so that the Project focused only on capacity building of the government staff, local communities and local NGOs and research activities for baseline information.

Based on the outputs of the Project Completion Workshop, mainstreaming of the transboundary biodiversity conservation would be carried out for the sustainability of the Project:

The Forest Department is responsible for operating, maintaining and developing the biodiversity conservation including the Taninthayi Range, and expects to be able to replicate the model conservation approach in other protected areas in the country.

- Nature and Wildlife Conservation Division (NWCD) of the Forest Department will update the National Biodiversity Strategy and Action Plan (NBSAP) as required by CBD and others taking into account experiences and lessons of the project in terms of policy development;
- NWCD of the Forest Department has started to implement the Re-introducing Natural Habitats (RNH) from 2019-20 to 2028-29 in Protected Areas which will also contribute to the transboundary biodiversity conservation.
- Planning and Statistics Division of the Forest Department will update the National Forest Master Plan (2000-2001 to 2029-2030) by incorporating biodiversity conservation and social safeguards based on the project's achievements as appropriate.

The long-term sustainable institutional structures and financing mechanisms that are expected to support the continuation of post-project activities after the close of project are summarized in the following discussion of sustainability.

4.4.1 Political will and policy arrangement

- At the international level, the Taninthayi (Tenasserim) Mountain Range, along the border between Myanmar and Thailand, has been recognized as a global important terrestrial eco-region containing some of the highest diversity of both bird and mammal species found in the Indo-Pacific region as an

important biodiversity hotspot by the IUCN. At the regional level such as ASEAN and Greater Mekong Sub-Region, the Taninthayi Range could be proposed as one of the important priority biodiversity corridors in the Region.

- The Ministry of Natural Resources and Environmental Conservation of Myanmar already made a presentation on the importance of Taninthayi Range as a high potential transboundary biodiversity conservation area at the 18th Annual Meeting of GMS which took place on 17th of May, 2012 in Jinghong, Yunnan, China. In addition to the Taninthayi Nature Reserve, and the Taninthayi National Park (Proposed), this transboundary cooperation initiative includes Lenya National Park (Proposed) in the southern part of Myanmar. In addition, the Taninthayi Range, the Sundaic Subregion has been included as a priority corridor for biodiversity conservation in the Myanmar National Biodiversity Strategy and Action Plan (NBSAP) which was formulated by the Forest Department in cooperation with UNEP/GEF and was adopted by the Government Meeting No. 16/2012 on the 3rd of May, 2012. Therefore, it is most likely that the Government will continuously expand biodiversity conservation in the Taninthayi Range based on the outcome of the project in the context of sustainable biodiversity conservation and management.

4.4.2 Institutional arrangements

- According to the results of the series of consultation meetings of the Project, effective institutional arraignments for the transboundary biodiversity conservation in the Taninthayi Range, will take place at the Taninthari Region as well as national level through the Forest Department, Myanmar.
- At the local level, NGOs such as Wildlife Conservation Society (WCS), World Wildlife Fund (WWF), Flora & Fauna International (FFI) and Friends of Wildlife (FoW) will be engaged in biodiversity conservation in the Project Area as they have long worked in the Taninthayi Range due to outstanding high biodiversity and abundance of tiger population. A lot of resources, including budgeting and manpower have been allocated to implement their programs. Therefore, the sustainability of the project will be enhanced through collaboratioin between the government and non-government organizations.

4.4.3 Socio-economic arrangement

- An Integrated Community Development Program (ICDP) will be initiated with community-based natural resource management plans, and nature-based tourism activities are recommended in some areas to increase livelihood opportunities for local residents in order to reduce pressures on the use of forests to support subsistence with agricultural practices. Concerted efforts will be extended to strengthen the long-term viability of the livelihood initiatives which have been introduced by establishing closer program linkages with civil society, including non-governmental organizations (NGOs) and rural credit programs. Co-management with local communities and provisions of tangible benefits to rural inhabitants are among the mechanisms advocated to reduce conflicts. The acceptance and support of local peoples are especially important for the

long-term effectiveness in conservation of protected areas. Stakeholder engagement through community forestry as well as Community Conserved Protected Area (CCPA) will be the effective way of people's participation in transboundary biodiversity conservation.

- A number of NGOs and private sectors as well as the Project have implemented the livelihood activities to eliminate local poverty in some villages and provide income opportunities. It is promising that the current and forthcoming Project (eg. Phase II of Stage I and Stage II of the Project) would contribute to transboundary biodiversity conservation and private sectors will contribute more budgets through CSR activities.
- With co-management, an involvement of local villagers and local administration to solve human-elephant conflict issues would be sustained if the management activities lead to their livelihood enhancement. An increase in income earnings from tourism activities to local communities is particularly challenged.
- The project team will regularly monitor the status of livelihood activities and explore other potential sources of funding, including the private sector through corporate social responsibility programs, to sustain those activities until they are able to become self-sufficient.

4.4.4 Financing mechanism

- After the completion of the project, all project facilities allocated to the central office, filed offices and protected areas will be transferred from ITTO to the Forest Research Institute of the Forest Department, Myanmar. Therefore, the equipment and facilities will be continuously operated and maintained by using a government budget in order to enhance professional biodiversity conservation research, management and monitoring.
- Since the trans-boundary biodiversity conservation initiative, especially lessons learned from the Emerald Triangle project, is proving to be a model for forest resources management, its vision is consistent with government policies and the initiative will be integrated into other government programs, which will provide several other possible funding sources to sustain the project.
- While annual government allocations may be insufficient to sustain effective wildlife monitoring, NGOs such as WCS, FFI, WWF, FoW etc. in Myanmar have a long-term plan to conduct wildlife monitoring and research in the Taninthayi Range and will use it as a hub for Smart Training in SEA. Meanwhile, there are several promising opportunities to support sustainable financing, such as the Small Grants Program (SGP) under the United Nations Development Program (UNDP), private companies and biodiversity offsets mechanisms or payments, for ecosystem services.

5. Assessment and Analysis

Myanmar is a signatory to a number of international agreements concerning biodiversity conservation and sustainable resource uses. The most relevant agreements are Convention on International Trade in Endangered Species of Wildlife Fauna and Flora (CITES), CBD, World Heritage Convention (WHC), Ramsar Convention and Man and Biosphere (MAB) Programme. For the most part, Myanmar's commitments to these agreements have yet to be fully translated into effective conservation action.

The Project Site, Taninthari Region, is one of the most biodiversity hotspot areas in Myanmar but the Region has been facing many challenges of deforestation and biodiversity loss.

The MONREC is fully responsible for the effective implementation of biodiversity conservation as outlined in the Myanmar National Biodiversity Strategy and Action Plan (NBSAP). These include: strengthening conservation of protected areas; mainstreaming biodiversity into other policy sectors; implement focused conservation actions for priority species; support local NGOs and academic institutions to engage in biodiversity conservation and create capacity to coordinate conservation investment in Myanmar.

Thus, this project is very much relevant to address the issues of deforestation and biodiversity loss as well as to fulfill the international commitments by the Government of Myanmar. In order to formulate and implement the Project successfully, Project identification, stakeholder analysis and series of stakeholder consultation processes were implemented. In order to make sure the full and effective participation of the stakeholders, stakeholders were identified as primary, secondary and tertiary stakeholders through participatory approach. Since the beginning of the Project, Institutions, characteristics, role and responsibility, involvement and potential activities of each and every stakeholders were identified for effective participation of the stakeholders. All relevant stakeholders were well informed about the Project objectives, expected outputs, workplan since the beginning of the Project. By doing so, the Project received supports and participation of various stakeholders at different level.

An important question for the effective and sustainable conservation of biodiversity is whether national capacity and resources will be sufficient enough to ensure the active participation of all stakeholders. Myanmar has been regarded as one of the most biodiversity rich countries in the Asia-pacific region, but biodiversity resources have been dwindling for many years due to the lack of integrated capacity and necessary resources for the sound protection and management of biodiversity.

However, the outstanding biodiversity features of the Taninthayi Range have been reduced and threatened due to lack of capacity and necessary resources to ensure the effective conservation of biodiversity. In this regard, the key problem to be addressed by the project has been identified as ineffective conservation of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar. The causes of this key problem which are outlined in the problem trees in Figure 1 include: (1) lack of capacity and resources to promote the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar; (2) lack of mechanisms for transboundary biodiversity conservation in the Taninthayi Range

in Myanmar; and (3) lack of the effective participation of local stakeholders in the conservation in the Taninthayi Range in Myanmar.

In order to address the problems identified for the Project area, the Project Objective have been correctly identified as to promote the sustainable conservation and management of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar.

The project strategy included strengthening capacity of national institutions in particular the Forest Research Institute and NWCD for conducting various researches for biodiversity conservation, management and monitoring, engagement of relevant stakeholders, awareness raising and livelihood improvements of the local communities. The Project works with local forest department as well as local CSO, NGOs and communities for the effective implementation of the transboundary biodiversity conservation as well as to increase the quality of project outcomes and publications. Local livelihood improvement, multi-stakeholders participation, capacity building and sharing lessons learned among relevant stakeholders at all levels (from local level to the Policy Makers) are very important activities for the successful implementation of the Project.

As it is mentioned in Section 3, the specific objective of the project is to promote the sustainable conservation and management of transboundary ecosystems and biodiversity in the Taninthayi Range in Myanmar. The following outputs were identified to achieve the specific objective:

Output 1: Capacity building of national institutions to design and implement the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar.

Output 2: Establishment of initial institutional mechanisms for the transboundary biodiversity conservation in protected areas, in the Taninthayi Range.

Output 3: Strengthening of local stakeholder participation and livelihoods of forest-dependent local communities in the Taninthayi National Park and its surrounding areas.

Since the Project is well designed, there are no critical differences between planned and actual Project implementation. All planned activities were fully implemented during the project period. Full and effective participation of the relevant stakeholders, sufficient resources, strong supports of the MONREC and line Ministries, enthusiasm and inserted efforts of the Project Team were the main driving forces of successful implementation of the Project in line with the agreed workplan, time frame and budget.

Time and budget allocated for the Project implementation is relatively adequate because this Project is just a Phase I of the Stage I. During the Project Period, according to the approved Work plan, the Project focused only on capacity building of the relevant stakeholders including Government Staff and local communities, consultations with relevant stakeholders for the establishment of initial institutional mechanisms for the transboundary biodiversity conservation in protected areas, in the Taninthayi Range and research activities including biodiversity, livelihood improvement, land use and land cover change, availability of NTFPs etc. were conducted. Limitation is the location of the Project Site which is located in Taninthari Township, very far away from FRI, Nay Pyi Taw. It was very hard to visit the Project site frequently for research and capacities activities. Nontheless, the Project

Management Team has made systematic project planning, and implement the Project successfully within the allocated budget and time.

The most significant external influence is the conflicts along the border of Myanmar and Thailand where some ethnic armed groups control some areas that limited free movement of researchers and Project staff for their project activities. These are also external risks over which the project has little or no control, but their impacts could be mitigated to some extent by providing necessary information about the Project activities, mutual understanding upon biodiversity conservation and building trust between the ethanic groups and the Project Team.

Various Project beneficiaries and stakeholders were involved the Project. Forest Research Institute, Nature and Wildlife Conservation Division of the Forest Department, local Forest Department, local communities and line Departments in the Project area are the primary stakeholders and they received a lot of benefits in the forms of technical supports and capacity building from the Project.

Because the Project organized series of training sessions in order to increase the capacity of project staff, rangers, border patrol police, and local communities. In addition, necessary equipment (e.g., GPS, hand compasses, cameras and camera traps) were allocated to the local staff for strengthening on-going monitoring system. The capacity-building strategies also included hands-on-training and sharing lessons learned about protected areas management, smart patrol and wildlife monitoring from experts. Local communities also benefited from the Project that they received series of hand-on trainings on Agroforestry techniques, NTFPs and livelihood improvement, bamboo-based handicraft trainings and community-based ecotourism. Partner organizations such as WCS, WWF, FFI, FoW etc. also received benefits from the Project through the participation in Workshops, trainings, seminars, consultation meetings and knowledge sharing events organized by the Project.

Mainstreaming of the project activities is the most appropriate approach for the project sustainability. The Forest Department is responsible for operating, maintaining and developing the biodiversity conservation including the Taninthayi Range, and expects to be able to replicate the model conservation approach in other protected areas in the country. Nature and Wildlife Conservation Division of the Forest Department will update the National Biodiversity Strategy and Action Plan (NBSAP) as required by CBD and others taking into account experiences and lessons of the project in terms of policy development. NWCD of the Forest Department has started to implement the Re-introducing Natural Habitats (RNH) from 2019-20 to 2028-29 in Protected Areas which will also contribute to the transboundary biodiversity conservation. Planning and Statistics Division of the Forest Department will update the National Forest Master Plan (2000-2001 to 2029-2030) by incorporating biodiversity conservation and social safeguards based on the project's achievements as appropriate. Sharing project results, implementing strategies and experiences to the relevant stakeholders and partner NGOs would also be helpful to replicate and continue the some of the project activities in the Project areas and other similar areas.

The Project Outcome is the effective establishment of trans-boundary biodiversity conservation area in the Taninthayi Range that enhances habitats for a wide-range of wildlife species and facilitates migration and log-term survival of large mammals.

Throughout the project implementation period, many government institutions such as Forest Research Institute, Nature and Wildlife Conservation Division of the Forest Department, Taninthari Region Forest Department, Department of General Administration, Department of Rural Development, Department of Small-scale industry, Department of Tourism and States and Region Forest Department, namely, Shan State, Chin State, Kachin State, Karen State, Rakhine State, Taninthari Region involved the project activities with different roles and responsibilities. For example, some Government Institutions participated in workshops, consultation meetings and trainings as Resource Persons or participants while others involved as collaborative research partners, information/data and services providers. NGOs also played important roles by providing resource persons to the trainings and workshops as well as providing biodiversity information and sharing their experiences of the Project site. Local communities also contributed to the project by participating trainings, workshops, consultation meetings, public talks and research activities.

6. Lessons Learned

Transboundary biodiversity conservation enables greater ecological integrity and contribute to the long-term survival of species and securing the survival of migratory species. It has the potential to generate substantial socio-cultural and economic benefits. Furthermore, transboundary conservation has the potential to bring a number of specific ecological benefits, for example:

- Ensuring the long-term persistence of viable populations of species
- Securing the survival of migratory species through cooperation in the management of key wildlife habitats in range states;
- Facilitating the reintroduction or natural recolonization of populations of species that currently survive only in isolated patches;
- Building greater ecological integrity by increasing the size of the area under conservation management, reducing fragmentation and integrating ecosystem processes and drivers such as fire, natural flow regimes and natural grazing regimes;
- Maintaining or strengthening ecosystem resilience in the face of climate change, in the case of relatively large ecosystems that allow longitudinal or altitudinal movement of species

The effective transboundary conservation is of crucial important to contribute to national level and regional biodiversity strategies and targets. The followings are the most important lessons learnt from the Project:

a) The technical details and baseline information about biodiversity, social, economical, cultural, legal etc. of the transboundary areas are inevitably needed to ensure the long-term success of the transboundary biodiversity conservation initiative.

b) Stakeholder analysis is very important that allows stakeholders to begin developing a common understanding of the substantive issues, the diversity of viewpoints and interests, and alternatives to transboundary conservation. It helps people understand the history and dynamics of a particular issue or situation and clarifies the incentives of the various parties to engage in transboundary collaboration. A stakeholder analysis can also be a vehicle to help people understand the costs and benefits of acting independently rather

than cooperatively. Moreover, people learn about each other's interests and values through an impartial assessment process, and this helps build understanding, trust, and working relationships

c) Transboundary biodiversity conservation involves multiple organizations and institutions from the local to the transboundary level. The transboundary context creates an additional layer of institutional complexity and a unique power structure. Involvement of every level of political organizations and different institutions is desirable.

d) Transboundary initiatives should identify the many levels of political organization that influence the transboundary management process as well as 'best fit' counterpart authorities across each level of political organization. Initiatives should actively involve stakeholders at every level and take into account the nature of power relations between stakeholders (van der Linde et al. 2001). Well-coordinated plans that consider risks at multiple scales while integrating stakeholders across scales provide an effective way of addressing the challenges of scale (Kark et al. 2015).

e) Developing and sustaining commitment for transboundary management at each level of political organization is one of the most important elements in determining the success of transboundary conservation.

f) To gain the engagement of relevant stakeholders as well as political supports, the importance of the values of biodiversity and its conservation should be promoted. The importance of transboundary collaboration for protecting or enhancing that value also needs to be highlighted.

g) The existence of multiple stakeholders and competing interests among and between the different stakeholders makes a challenging goal. Conflicts can exist between the sovereign interests of nation states and the welfare of local communities who straddle these borders. An innovative approach of sustainability of funding for the biodiversity conservation as well as for income generation and livelihood improvement of local communities will be needed over the long-term.

h) The inequitable distribution of benefits between countries and shareholders has been identified as a major hindrance to transboundary initiatives. Transboundary initiatives should therefore offer genuine opportunities for the equitable distribution of tangible benefits for stakeholders at all levels of political organization.

i) Transboundary management of biodiversity is often part of the ecological case for management at the scale of ecosystems. To implement the ecosystem approach across international boundaries, transboundary conservation needs to occur in the wider landscape beyond protected areas and take into account the various sectors that impact biodiversity.

j) Successful transboundary management requires good governance at all levels of political organization. Corruption and lack of transparency erode public support, impede effective resource mobilization and divert resources from poverty reduction and sustainable economic development activities. It is therefore important to establish transparency and accountability between levels of political organization from the local to the transboundary (van der Linde et al. 2001).

k) Monitoring and evaluation based on specific indicators are effective tools for demonstrating progress and enlisting stakeholder support. Indicators should be developed with and by stakeholders at each political scale. At the local level, site-specific biodiversity and livelihood indicators and targets should be developed with the communities where initiatives are based. Involving local communities in monitoring can create a sense of empowerment and pride while enabling communities to learn from mistakes (Roe et al. 2006).

l) Transboundary initiatives create additional demands on the administration of natural resources, policy development and harmonization, consultation processes, and implementation. Capacity building programmes are very crucial for all relevant stakeholders.

m) It is very important to understand and work with the unique environmental, political, social and economic circumstances/ dynamics of each transboundary conservation initiative while building legitimacy. In some cases top-down approaches will work; in others, bottom-up approaches or third-party involvement will generate more successful results. A combination of different approaches may also be the way to establish effective cooperative framework in a transboundary biodiversity conservation area (TBCA).

n) It is suggested to use available legal and policy instruments; consider new ones as well. The extent of political commitment and supports are very crucial for the successful implementation of the biodiversity conservation. Likewise, mutual understanding and commitments among the stakeholders (from each country) is a key consideration in determining what types of policy and legal instruments will work best in transboundary conservation.

o) If two countries consider to implement the transboundary biodiversity conservation, having policy support at a higher level through a Memorandum of Understanding or a binding agreement helps establish the legitimacy of transboundary cooperation, but informal agreements are also useful and may evolve into more formal arrangements.

7. Conclusions

The outstanding biodiversity features of the transboundary area in Taninthayi Range are vulnerable due to poaching, fragmentation and encroachment for agriculture, illegal logging, settlements inside and around the park, and human-elephant conflicts. In addition, intensive hunting of wildlife occurs in transboundary areas of Myanmar and Thailand. Unsustainable harvesting of non-timber forest products is prevalent throughout the transboundary areas. Some areas have been subjected to seasonal forest fires which caused negative impacts on biodiversity. Therefore, long-term biodiversity conservation especially along the transboundary areas are crucial important.

The project aimed at enhancing national capacity and resources in biodiversity conservation and ineffective conservation of forest ecosystems and biodiversity in the Taninthayi Range in Myanmar. The project was designed to achieve 1) capacity building of national institutions to design and implement the sustainable biodiversity conservation, monitoring and research in the Taninthayi Range in Myanmar; 2)

establishment of initial institutional mechanisms for the transboundary biodiversity conservation in protected areas in the Taninthayi Range; and 3) strengthening of local stakeholder participation and livelihoods of forest-dependent local communities in the transboundary biodiversity conservation areas.

Accordingly, the Project organized series of trainings, consultation meetings, workshops and public education talks as well as conducted research activities related to biodiversity (plant and wildlife), socioeconomic conditions, non-timber forest products, landuse and land cover change assessment in the Taninthari Region. The Project also initiated the livelihood improvement activities such as agroforestry, bamboo-based handicraft, non-timber forest products and nature-based tourism. More importantly, the Project made to ensure multi-stakeholder participation in the Project activities that made project attractive and successful.

Despite the short project period, there are many lessons learnt from the Project. The political support is of crucial important for the successful implementation of the transboundary conservation because it involves multiple organizations and institutions from the local to the transboundary level. Facilitation, coordination, resource mobilization and law enforcement could be more effective only when the Project receives political supports. Transboundary initiatives create additional demands on the administration of natural resources, policy development and harmonization, consultation processes, and implementation. Capacity building programmes are very crucial for all relevant stakeholders. Transboundary biodiversity conservation almost always includes a variety of actors so that it is very important to establish a trust and coordination mechanism among relevant stakeholder. Habitat management and conservation for the plants and wildlife plays a vital role in transboundary biodiversity conservation. In this regards, The technical details and baseline information about biodiversity, social, economical, cultural, legal etc. of the transboundary areas are inevitably needed to ensure the long-term success of the transboundary biodiversity conservation initiative. The followings activities recommended for the future transboundary biodiversity conservation:

8. Recommendations

a) Based on the experiences of the Project implementation (at the Project level), we would like to suggest the priorities for transboundary biodiversity conservation in the future:

b) Stakeholder analysis should be undertaken that allows stakeholders to begin developing a common understanding of the substantive issues, the diversity of viewpoints and interests, and alternatives to transboundary conservation.

c) The technical details and baseline information about biodiversity, social, economical, cultural, legal etc. of the transboundary areas should be collected to make effective conservation planning processes and transboundary initiatives.

d) Transboundary conservation initiatives should actively involve relevant stakeholders at every level and take into account the nature of power relations between stakeholders. It is therefore important to establish transparency and accountability among the different levels of relevant organization.

e) Transboundary conservation needs to occur in the wider landscape beyond protected areas and take into account the various sectors that impact biodiversity to implement the ecosystem approach across international boundaries.

f) Transboundary initiatives should offer genuine opportunities for the equitable distribution of tangible benefits for stakeholders at all levels of political organization.

g) The importance of the values of biodiversity and its conservation should be promoted in order to gain the engagement of relevant stakeholders as well as political supports.

h) It is suggested to use available legal and policy instruments; consider new ones as well. The extent of political commitment and supports are very crucial for the successful implementation of the biodiversity conservation.

i) Transboundary initiatives involve various stakeholders in the fields of administration of natural resources, policy development and harmonization, consultation processes, and implementation. Capacity building programmes for various stakeholders for different levels are very crucial and needs to be organized on a sustainable way.

j) An innovative approach of sustainability of funding for the biodiversity conservation as well as for livelihood improvement of local communities should be developed as an integral part of the transboundary biodiversity conservation.

Responsible for the Report

Name: Dr. Thaung Naing Oo Position Held: National Project Manager

Position: Director, Forest Research Institute, Forest Department

Date:

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Appendix 1: Project Financial Statement (in US dollar)

	Component	Original Amount (A)	Accrued (B)	Expended (C)	Total Expenditures (D) (B+C)	Available Funds (A-D)
10	**Project Personnel**					
11	Project Manager (1)					
12	Project Secretary (1)	7,700		7,700	7,700	-
18	Field Assistance (5)	-			-	
110	GIS (Landuse/landcover change report)	1,848		1,848	1,848	-
111	Wildlife Survey	1,998		1,998	1,998	-
113	Social-economic assessment	2,000		2,000	2,000	-
114	Non Timber Forest Product Survey	1,988		1,988	1,988	-
114	Economic Valuation of Ecosystem Services	2,084		2,084	2,084	-
116	Independent Auditor (1)	2,700	1,030		1,030	1,670
19	**Component Total**	**20,318**	**1,030**	**17,618**	**18,648**	**1,670**
20	**Sub-Contract**					
21	Conduct basic line survey for biodiversity in TNP	2,175		2,175	2,175	-
213	Establish a regular patrolling system	-			-	-
214	Conduct SMART patrolling trainings	5,836		5,836	5,836	-
29	**Component Total**	**8,011**		**8,011**	**8,011**	**-**
30	**Travel**					
31	Organize meetings to develop institutional mechanisms for the transboundary biodiversity conservation and form a joint body	2,000		2,350	2,350	(350)
33	National workshops	6,000		5,443	5,443	557
34	Regional workshops	7,767		6,769	6,769	998
35	Consultation meetings to identify target local communities and NGOs to promote community-based conservation in the Taninthayi Range in particular in the TNP	3,171		3,171	3,171	-

	Component	Original Amount (A)	Accrued (B)	Expended (C)	Total Expenditures (D) (B+C)	Available Funds (A-D)
36	Conduct village consultations, village zonings and development of community-based natural resource management (CBNRM) plans to support the establishment of the TNP	4,028		4,548	4,548	(520)
310	Conducting education programs	4,022		4,046	4,046	(24)
311	Local travel cost	19,377		18,516	18,516	861
39	**Component Total**	**46,365**	**-**	**44,843**	**44,843**	**1,522**
40	**Capital items**					
413	GPS	319		319	319	-
414	Camera	1,593		1,593	1,593	-
420	Tables for meeting rooms	194		194	194	-
421	Chairs for meeting rooms	95		95	95	-
421	Laptop and desktop	1,975		1,975	1,975	-
421	Printer – color laser	268		268	268	-
421	Air-conditioning	219		219	219	-
421	Scanner	108		108	108	-
49	**Component Total**	**4,771**	**-**	**4,771**	**4,771**	**-**
50	**Consumable items**					
52	Field equipment for conservation (campus, binocular, counter, sleeping bed, backpack, tripod. etc.)	1,689		1,689	1,689	-
57	Preparing technical guidelines/ operational manuals	1,955		1,955	1,955	-
58	Publishing and disseminating guidelines/ manuals	2,138		2,129	2,129	9
510	Reporting on implementation and dissemination	3,198	100	4,689	4,789	(1,591)
511	Publications of the results	4,139		2,492	2,492	1,647
512	Materials for education programs (computer and accessories, projector, handheld generator, digital camera, printer, pamphlet and posters)	229		2,411	2,411	(2,182)
59	**Component Total**	**13,348**	**100**	**15,365**	**15,465**	**(2,117)**

	Component	Original Amount (A)	Accrued (B)	Expended (C)	Total Expenditures (D) (B+C)	Available Funds (A-D)
60	**Miscellaneous**					
61	Trainings for agro-forestry and livelihood development activities in the selected villages (agro-forestry, bee-keeping or other income generating activities)	5,169		5,169	5,169	-
62	Training of protected area system, biodiversity conservation and habitat management for regional forest staff and local communities	5,005		5,005	5,005	-
63	Training of income generation to improve local villagers livelihood through invitation of local communities to FRI, Yezin	5,828		5,828	5,828	-
64	Assessments of eco-tourism development and trainings for community-based ecotourism	4,960		5,031	5,031	(71)
65	Social development activities in the selected villages to facilitate their participation in conservation	3,370		3,379	3,379	(9)
66	Facilitate strengthening community-based organizations (CBOs) in conservation	1,978		2,083	2,083	(105)
	Miscellaneous (office renovation, office settlement, bank charges, etc)	2,877	872	2,895	3,767	(890)
69	**Component Total**	**29,187**	**872**	**29,390**	**30,262**	**(1,075)**
70	**National Management Cost**					
79	**Component Total**					
	Total (19-79)	**122,000**	**2,002**	**119,998**	**122,000**	**-**
80	Project monitoring and administration					
81	ITTO monitoring and review					
82	ITTO midterm evaluation					
	Sub-total (ITTO M&E)					
83	ITTO program support costs (12% on items 10-82)					
89	**Component Total**	18,000			18,000	-
	GRAND TOTAL (19-89)	**140,000**			**140,000**	**-**

Note: Some budget amendments are according to the discussions of 2nd PTC (Project Technical Committee) meeting on 30 September 2019.

Appendix 2: Project Cash Flow Statement

Project No. PD 723/13 Rev.2 (F) Phase I – Stage I		**Period ending on:** 31 March, 2020		
Project Title: Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Tanintharyi Range in Myanmar				
Component	**Reference**	**Date**	**Amount in US$**	**Local Currency (Kyats in kind)**
A. Funds received from ITTO:				
1. First installment		16.7.2018	70,000	
2. Second installment		14.5.2019	52,000	
Total funds received:			**122,000**	
B. Expenditures by executing agency:				
10. Project personnel				
12 Project Secretary			7,700	
110 GIS Consultant			1,848	
111 Wildlife Survey Consultant			1,998	
113 Social-economic Consultant			2,000	
114 Non Timber Forest Product Consultant			1,988	
114 Economic Valuation of Ecosystem Services Consultant			2,084	
116 Independent Auditor				
19 Sub-total			**17,618**	
20. Sub-contract				
21 Conduct basic line survey for biodiversity in TNP			2,175	
213, 214 Establish a regular patrolling system and conduct SMART patrolling training			5,836	
29 Sub-total			**8,011**	
30 Travel				
31 Organize meetings to develop institutional mechanisms for the transboundary biodiversity conservation and form a joint body			2,350	
33 National workshops			5,443	
34 Regional workshops			6,769	

Project No. PD 723/13 Rev.2 (F) Phase I – Stage I		**Period ending on:** 31 March, 2020		
Project Title: Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Tanintharyi Range in Myanmar				
Component	**Reference**	**Date**	**Amount in US$**	**Local Currency (Kyats in kind)**
35 Consulation meetings to identify target local communities and NGOs to promote community-based conservation in the Tanintharyi Range in particular in the TNP			3,171	
36 Conduct village consultations, village zonings and development of community-based natural resource management (CBNRM) plans to support the establishment of the TNP			4,548	
308 Conduct patrolling (4 times of 5-day patrolling in a month, 5 persons will be in each time with four teams in the National Park				
310 Conducting education programs			4,046	
311 Local travel cost			18,516	
39 Sub-total			**44,843**	
40 Capital items				
413 GPS			319	
414 Camera			1,593	
420 Tables for meeting rooms			194	
421 Chairs for meeting rooms			95	
421 Laptop and desktop			1,975	
421 Printer-color laser			268	
421 Air-conditioning			219	
Scanner			108	
49 Sub-total			**4,771**	
52 Field equipment for conservation (campus, binocular, counter, sleeping bed, backpack, tripod. etc.)			1,689	
57 Preparing technical guidelines/ operational manuals			1,955	
58 Publishing and disseminating guidelines/manuals			2,129	
510 Reporting on implementation and dissemination			4,689	

Project No. PD 723/13 Rev.2 (F) Phase I – Stage I		**Period ending on:** 31 March, 2020		
Project Title: Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Tanintharyi Range in Myanmar				
Component	**Reference**	**Date**	**Amount in US$**	**Local Currency (Kyats in kind)**
511 Publications of the results			2,492	
512 Materials for education programs (computer and accessories, projector, handheld generator, digital camera, printer, pamphlet and posters)			2,411	
59 Sub-total			**15,362**	
60 Miscellaneous				
61 Trainings for agro-forestry and livelihood development activities in the selected villages (agro-forestry, bee-keeping or other income generating activities)			5,169	
62 Training of protected area system , biodiversity conservation and habitat management for regional forest staff and local communities			5,005	
63 Training of income generation to improve local villagers livelihood through invitation of local communities to FRI, Yezin			5,828	
64 Assessments of eco-tourism development and trainings for community-based ecotourism			5,031	
65 Social development activities in the selected villages to facilitate their participation in conservation			3,379	
66 Facilitate strengthening community-based organizations (CBOs) in conservation			2,083	
Miscellaneous (office renovation, office settlement, bank charges, etc)			2,895	
69 Sub-total			**29,390**	
70 National management costs				
79 Sub-total				
Total (19-79)			**113,998**	
80 Project monitoring & administration				
81 ITTO monitoring and review				

Project No. PD 723/13 Rev.2 (F) Phase I – Stage I			**Period ending on:** 31 March, 2020	
Project Title: Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Tanintharyi Range in Myanmar				
Component	**Reference**	**Date**	**Amount in US$**	**Local Currency (Kyats in kind)**
82 ITTO midterm evaluation				
Sub-total (ITTO M&E)			18,000	
83 ITTO program support costs (12% on items 10-82)				
89 Sub-total			**18,000**	
100 Grand Total (19-89)			**131,998**	
***Remaining balance of fund**			**2,002**	

***Accrued cost for External Audit during May 2020.**

Appendix 3: List of tree species

Table 1. Species, their abundance and families found in Natural Forest in Taungpharu reserved forest and Thein Kone reserved forest of Tanintharyi Township

No	Family and species	Number of species
1	**Anacardiaceae**	**63**
	Swintonia floribunda Griff.	26
	Bouea burmanica Griff.	19
	Spondias sp.	12
	Swintonia schwenkii (Teijsm. & Binn.) Teijsm. & Binn.	6
2	**Annonaceae**	**30**
	Annonaceae species	30
3	**Bignoniaceae**	**3**
	Heterophragma adenophylla (Wall.) Seem. ex Benth. & Hook.	3
4	**Bombacaceae**	**1**
	Durio sp.	1
5	**Celastraceae**	**15**
	Lophopetalum fimbriatum Wight	3
	Lophopetalum fimbriatum Wight	4
	Microtropis bivalvis (Jack.) Wall.	8
6	**Clusiaceae**	**2**
	Garcinia heterandra Wall.	2
7	**Combretaceae**	**2**
	Anogeissus acuminata Wall.	1
	Terminalia catappa L.	1
8	**Dipterocarpaceae**	**104**
	Dipterocarpus sp.	57
	Hopea helferi (Dyer) Brandis	11
	Shorea farinosa Fischer	29
	Shorea gratissima Dyer	1
	Shorea sp.	5
	Melia sp.	1
9	**Ebenaceae**	**13**

No	Family and species	Number of species
	Diospyros kurzii Hiern.	8
	Diospyros sp.	5
10	**Elaeocarpaceae**	**1**
	Elaeocarpus griffithii (Wight) A. Gray	1
11	**Euphorbiaceae**	**143**
	Aporusa villosula Kurz	24
	Aporusa wallichii Hook. f.	83
	Baccaurea sapida Muell. Arg.	16
	Croton sp.	20
12	**Fabaceae**	**4**
	Abarema bigemina (L.) Kosterm.	1
	Dialium indum L.	3
13	**Gnetaceae**	**1**
	Gnetum gnemon L.	1
14	**Hypericaceae**	**37**
	Mesua nervosa Planch. & Triana	37
15	**Lamiaceae**	**57**
	Gmelina arborea Roxb.	34
	Vitex coriacea C.B. Clarke	23
16	**Lauraceae**	**101**
	Cinnamomum verum Presl	8
	Litsea elongata (Nees) Benth.	1
	Litsea laurifolia (Jacq.) Kurz	1
	Nothaphoebe condensa Ridley	62
	Phoebe tavoyana (Meissner) Hook. f.	29
17	**Magnoliaceae**	**3**
	Micheli sp.	1
	Michelia champaca L.	2
18	**Malvaceae**	**55**
	Colona sp.	1
	Eriolaena candollei Wall.	1
	Pentace burmanica Kurz.	51
	Pterospermum jackianum Wall. ex Mast.	1

No	Family and species	Number of species
	Sterculia sp.	1
19	**Meliaceae**	**8**
	Chisocheton sp.	4
	Sandoricum koetjape (Burm. f.) Merr.	4
20	**Moraceae**	**12**
	Ficus sp.	1
	(blank)	11
21	**Myristicaceae**	**20**
	Myristica angustifolia Roxb.	20
22	**Myrtaceae**	**80**
	Syzygium subrufum (King) Masam.	1
	Syzygium pachyphyllum (Kurz) Merr. & L.M. Perry	2
	Syzygium sp.	72
	Syzygium thumra (Roxb.) Merr. & L.M. Perry	2
	Syzygium zeylanicum (L.) DC.	3
23	**Opiliaceae**	**2**
	Champereia manillana (Blume) Merr.	2
24	**Polygalaceae**	**6**
	Xanthophyllum griffithii Hook. f. ex A.W. Benn.	6
24	**Rubiaceae**	**51**
	Tabernaemontana ophiorrhizoides Kurz	15
	Tarenna sp.	36
25	**Sapindaceae**	**55**
	Nephelium sp.	47
	Nephelium ramboutan-ake (Labill.) Leenh.	8
26	**Sapotaceae**	**45**
	Mimusops elengi L.	1
	Palaquium obovatum (Griff.) Engl.	34
	Payena sp.	10
27	**Theaceae**	**3**
	Ternstroemia penangiana Choisy	3

No	Family and species	Number of species
28	**Thymelaeaceae**	**2**
	Aquilaria sp.	2
29	**Ulmaceae**	**1**
	Celtis sp.	1
30	Unknown individuals	20
	Grand Total	**940**

Appendix 4: List of wildlife animals and wild bird species

Table 2: List of Bird Species recorded in the study area

No.	Common Name	Scientific Name
1.	Hair Crested Drongo	*Dicrurus hottentottus*
2.	Common Hill Myna	*Gracula religiosa*
3.	Black Naped Oriole	*Oriolus xanthornus*
4.	Chestnut Breasted Malkoha	*Zanclostomus curvirostris*
5.	Oriented Pied Hornbill	*Anthracoceros albirostris*
6.	Taiga Flycatcher	*Terpsiphone paradisi*
7.	White throated Kingfisher	*Halcyon smyrnensis*
8.	Black thighed Falconet	*Microhierax fringillarius*
9.	Spotted Dove	*Streptopelia chinensis*
10.	Red Breasted Parakeet	*Psittacula alexandri*
11.	Asian Fairy Bluebird	*Irena puella*
12.	Common Kestral	*Falco tinnunculus*
13.	Greater Flameback Female	*Chrysocolaptes lucidus*
14.	Red Wattled Lapwing	*Vanellus indicus*
15.	White Billied Woodpecker	*Dryocopus javensis*
16.	Greater Racket Tailed Drongo	*Dicrurus paradiseus*
17.	Black Crested Bulbul	*Pycnonotus flaviventris*
18.	Dollar Bird	*Eurystomus orientalis*
19.	Blue Rock Thrush	*Monticola solitarius*

20.	Black Shoulder Kite	*Elanus caerulus*
21.	Collared Falconet	*Microhierax caerulescens*
22.	Long-tailed Shrike	*Lanius cristatus*
23.	Great Hornbill	*Buceros bicornis*
24.	Ashy Drongo	*Dicrurus leucophaeus*
25.	Pale Blued Flycatcher	*Cyornis unicolor*
26.	White Bellied Munia	*Lonchura leucogastra*
27.	Bronzed Drongo	*Dicrurus aeneus*
28.	Plain Prinia	*Prinia inornata*
29.	Refuscent Prinia	*Prinia rufescens*
30.	Tiger Shrike	*Lanius tigrinus*
31.	Thick Billed Green Pigeon (Male)	*Treron curvirostra*
32.	Vernal Hanging Parrot	*Loriculus vernalis*

Table 3: List of wild animals recorded in the study area

No.	**Common Name**	**Scientific Name**
1	Wild Elephants	*Elephas maximus*
2	Asian Black Bear	*Ursus thibetanus*
3	Leopard	*Neofelis nebulosa*
4	Leopard Cat	*Prionailurus bengalensis*
5	Stumped Tailed Macaque	*Macaca arctoides*
6	Wild Boar	*Sus scrofa*
7	Malayan Tapir	*Acrocodia indica*
8	Large Indian Civet	Zibetha indica
9	Marbled Cat	*Pardofelis marmorata*
10	Red Muntjac	*Muntiacus* muntjak
11	Malayan Procupine	*Hystrix brachyuran*
12	Lesser Mousedeer	*Tragulus kanchil*
13	Large Toothed Ferret Badger	*Melogale personata*
14	Yellow Throated Marten	*Martes flavigula*),
15	Red Jungle Fowl	*Gallus gallus*
16	Great Argus	*Polyplectron bicalcaratum*
17	Fea’s Muntjac	*Muntiacus feae*

Appendix 5: Brief information about project activities implemented during the Project Period

Year 1: 1st April–31st December, 2018

1.1 First Project Technical Committee (PTC) Meeting

The first Proejct Technical Meeting was held on 28th February 2018 at the H.Q of Forest Department, Nay Pyi Taw. Actually, this meeting was organized before official launching of the Project due to the some administrative reasons. Together with Dr. Hwan Ok Ma, Projects Manager of ITTO, Director General and Senior Officials of Forest Department attended the Meeting. The Meeting provided the guidance to PMU in order to achieve the set objectives of the Project.

1.2 Inception Workshop at FRI, Yezin

Project Inception Workshop was held on 24-8-2018 at the Forest Research Institute, Yezin, Nay Pyi Taw. The main objective of this Workshop was to inform related stakeholders about the Project as well as to work together in finalizing detailed workplan and budget plan. Furthermore, officials from Taninthari Township Forest Department, Park Warden of Taninthari Nature Reserve Project (TNRP) and representatives of local CSO and NGOs share their experiences in biodiversity conservation in Transboundary Area. About 32 participants from different organizations were attended the Inception Workshop.

1.3 SMART Training

SMART Training for wildlife was organized from 5-9-2018 to 7-9-2018 at the Forest Plantation Camp of Taninthari Township, Tanintari District, Taninthari Region. The main objectives were to improve the awareness of importance of trans-boundary biodiversity conservation and to train the local staff and local communities how to apply SMART tools in biodiversity conservation. Thirty-threeparticipants from Forest Department of Taninthari Township and local communities attended the training course. Opening Ceremony was held on September 5, 2018 and on behalf of Dr. Thaung Naing Oo, Project Manager and Director of Forest Research Institute (FRI), U Ba Khin, Deputy Director (DD) of FRI delivered Opening Speech. At end of the Training on September 7, 2018, Dr. Thaung Naing Oo addressed Closing Speech and awarded Training Completion Certificates to the training participants.

1.4 Awareness Raising and Consultation Meeting

Awareness and Consultation Meeting was held on September 8, 2018 at the Meeting Hall of General Administration Department, Taninthari Township. This event was held aiming to inform the objectives of the Project as well as the main project activities to the relevant stakeholders in the Project site. The event was successful that main stakeholders (55 participants in total) including representatives from line departments, local CSO, NGOs and head of village tracks attended the event and share their views, experiences and advices for the successful implementation of the Project. General Administration Department of Taninthari Township provided their meeting room to organize this event.

1.5 Livelihood Improvement and Agroforestry Training

Livelihood Improvement and Agroforestry Training was organized from 9-9-2018 to 11-9-2018 at Forest Plantation Camp of Taninthari Township, Tanintari District, Taninthari Region. The main objective of this training is to improve the capacity of local communities in enhancing livelihood opportunities related to agroforestry which is the one of the best landuse practices addressing drivers of deforestation, soil degradation, biodiversity loss and poverty issues. Twenty-five local people participated the training. The training was designed to understand and raising awareness about the multiple benefits of agroforestry, various agroforestry design, community forestry and role of forests in addressing climate change related issues. Training participants were break-out into four group, and assigned to draw appropriate agroforestry designs based on their own land, and asked to make presentation group by group. This exercise helped us to better understanding of effective landuse practices and appropriate agroforestry designs in their own land as well as community forests.

1.6 Socio-economic assessment

Socio-economic assessment in the Project site is one of the Project activities so that the assessment was conducted in seven villages as a first time. The following criteria were set in order to select the survey villages:

- The villages should be accessible and good security;
- The villages should be in or near or along the tran-boundary area;
- The villages should rely mainly on forests and forest products as well as agriculture for their livelihood;
- The villages should participate the project activities actively.

Socio-economic assessment was conducted from 5.9-2018 to 12.9-2018 SEVEN villages (Border Area) in Taninthari Township. Based on the set Criteria, seven villages, namely, Thein Kone, The Phyu, Chaung Nauk Pyan, Aye Thayar, Ye Phyu, Tamote Chone, Le Taw Ya villages were selected and conducted the socio-economic assessment.

1.7 Public education and awareness talks

Public education and awareness activities are very important activity to better understanding about the role of forests in climate change mitigation, biodiversity conservation etc. about Accordingly, public education talk was held two times on 12-9-2018 and 29-9-2018 at the Taninthari Township. For the first education talk, project team invited about 43 local people from various villages, namely:Shan Indaw, Tamote Chone, Ye Phyu, Chaung Nauk Pyan, Aye Thayar, Peyar, La Thar, to the Plantation Nursery Site of Taninthari Township. Project team talked about role of forest in climate change mitigation, biodiversity conservation, major threats of biodiversity in transboundary area, importance of participation of local communities in transboundary conservation and habitat management etc. For the second time of education talk, Local Forest Department organized it at Buddhist Monastery of Tha-Kyat village. Staff Officer of Tanintharyi Forest Department led this education talk and they invited about 50 local people from nearby villages including villages involved in Tha-Kyat village tract. The local FD staff (Staff Officer and Range Officer) talked mainly about the importance of forests for local livelihood, sustainable forest

management, important roles of local ethnic groups in forest resources management and transboundary biodiversity conservation.

1.8 Habitat Management Training

Habitat Management Training was organized from 19-9-2018 to 21-9-2018 at Mt. Popa Mountain Park, Mandalay Region. The main objectives were to develop the capacity of Forest Rangers and Deputy Forest Rangers in conserving biodiversity and their habitats. The training was composed of lectures and practical in biodiversity conservation and assessment. Lectures about major drivers of habitat loss and degradation, Biodiversity Conservation and Protected Area Law (2018) and Rules (Draft, 2018), National Biodiversity Strategic Action Plan (NBSAP 2015), Procedures for Constitution of Protected Areas, Stakeholder Mapping and relevant lectures were provided. Furthermore, ulitization of GPS, SMART Patrolling, Boundary Demarcation, Demonstrations of habitat restoration were also provided through the training.

1.9 Biodiversity survey

During November 2018, biodiversity survey was conducted by the researcher team of Forest Research Institute, Yezin. The research team involved five principal researchers; two plant taxonomists and three forestry scientists. One forester from the local Forest Department supported the team in the field work together with the four local people. Therefore, the team was composed of ten people in conducting the plant inventory in the field. The study area for the first survey was Taungpharu reserved forest, Tanintharyi Township, Tanintharyi Region. For this time, the research team conducted plant inventory and soil survey for total eight sample plots (30m x 30 m). DBH (Diameter at Breast Height) and Heights (total tree height and commercial bole height) were measured for each tree (≥ 5 cm DBH, ≥ 2m in Height). The specimens and DNA for all trees were collected for the purpose of scientific identification and soil samples were also collected for each plot to test their physical and chemical properties.

1.10 Survey on Non-timber forest products

From the 26th November 2018 to 6th December 2018, the research team conducted NTFP (Non-Timber Forest Products) research. The team included six principal researcher of FRI. The research was conducted in six villages namely Aye Tharyar, Chaung Lamu, Ban Lamut, Yan Pho, Naung Pin Gone, Tar Palat villages in Tanintharyi Township. Three parts were included in the survey; field observation for NTFPs, focused group discussions and semi-structured questionnaire survey. As the preliminary result, it was found out that the most prominent NTFPs that was mostly used by local communities were firewood, bamboo, rattan, orchids, ferns and some medicinal plants. Almost all of the local community extracted those products excluding medicinal plants from their orchards mainly for their subsistent uses. Some earned money by selling medicinal plants to support their livelihood.

1.11 Consultation meetings for the development of community-based natural resource management (CBNRM) plan

On 2nd December and 3rd December 2018, consultation meetings were held for the development of community-based natural resource management (CBNRM) plan in the project area. The first meeting (2nd December) was aimed to generate the basic information of the selected villages; history of the village, organization structure, socio-economic conditions, different land-uses and land allocation, seasonal calendar, resources of the village in the past and present. The first meeting was attended by 39 local people from six different villages and it was organized at the Chaung Naut Pyan village of the Tanintharyi Township. The second meeting (which was held at Myat Taw Win Hotel, Tanintharyi city) was attended by 30 participants who were representatives of local NGOs, INGOs, different Government Organizations and village organizations. It was organized with the main objective of the development of community-based natural resource management (CBNRM) plan to support the trans-boundary biodiversity conservation.

Brief information about project activities implemented during the Project Period

Year 2: 1st January – 31st December, 2019

Description of the Work implemented during the period

2.1 Wildlife Survey

During third week of January 2019, camera traps were collected and data were extracted from those camera traps. During the month of November 2018, 56 camera traps had been set up in the natural forests of Tanintharyi Township with the technical support of Chinese Academy of Science (CAS). Points were purposively sampled by cooperation with local experienced guides where wild animals usually inhabited. In total, 17 wildlife species have been found by the images including clouded leopard, wild boar, red muntjac, Asian black bear, etc. The bird survey was also included by learning the bird species occupied in the various types of microhabitats including secondary forests, forest plantations, agricultural lands and fallow lands. All birds were watched through the unaided eyes and binoculars (Bushnell 7x 50 mm) and recorded by taking photographs.

In addition to the documentation of the list of wildlife animals and birds by means of camera traps and cameras, participatory mapping were also included to record the trend of dominance of wildlife species throughout the time. Focused group discussions were conducted in seven villages to note down the list of wild animals in the past and present, to score the most important wild animals and disappeared animals, and causes of their extinction. Elder persons and knowledgeable persons were invited during the discussions.

2.2 Forest Inventory and Plant Survey

During January 2019, the second plant survey was conducted by the researcher team of Forest Research Institute, Yezin. The research team involved five principal researchers; two plant taxonomists and four forestry scientists. One forester from the

local Forest Department supported the team in the field work together with the three local people. Therefore, the team was composed of ten people in conducting the plant inventory in the field. The study area for the second survey was Taungpharu reserved forest and Theinkone reserved forest, Tanintharyi Township, Tanintharyi Region. For this time, the research team conducted plant inventory and soil survey for total seven sample plots (30m x 30 m). DBH (Diameter at Breast Height) and Heights (total tree height and commercial bole height) were measured for each tree (≥ 5 cm DBH, ≥ 2m in Height). The specimens and DNA for all trees were collected for the purpose of scientific identification and soil samples were also collected for each plot to test their physical and chemical properties. In total for the first and second surveys, 67 tree species were found in all fifteen plots (eight plots for first time and seven plots for second time).

2.3 Public education and awareness talks

Public education and awareness activities are very important activity to better understanding about the role of forests in climate change mitigation, biodiversity conservation etc. about Accordingly, public education talk was held one time on 22 January 2019 at the Taninthari Township. This education talk was held at the Basic Education Middle School Hall, Chaunglamu Village, Tanintharyi Township. Students (grade five to grade nine) and teachers from the school and local people from that village attended the education talk. In total, about 100 participants joined the ceremony. Project team talked about role of forest in climate change mitigation, biodiversity conservation, major threats of biodiversity in transboundary area, importance of participation of local communities in transboundary conservation, etc,.

To contribute the public education to raise the awareness of people in terms of forest resources conservation, the ceremony for “International Day of Forests 2019” was held at Forest Research Institute, Yezin, Naypyitaw, Myanmar on 21st March 2019 in collaboration with Korea Forest Services (KFS), FAO, UN-REDD Programme Myanmar. Forest Research Institute, Forest Department organized that occasion by the financial support of the above-mentioned organizations. About 150 participants; some of those participants are from Forest Department, University of Forestry and Environmental Science (UFES), Myanma Timber Enterprise (MTE), Dryzone Greening Department (DZGD), Survey Department under Ministry of Natural Resources and Environmental Conservation (MoNREC); some are from different Line Ministries; students and teachers from Basic Education High School attended that occasion.

2.4 Consultation meeting for the development of community-based natural resource management (CBNRM) plan

On 30 March 2019, a consultation meeting was held for the development of community-based natural resource management (CBNRM) plan in the project area. The first meeting (2nd December) was aimed to generate the basic information of the selected villages; history of the village, organization structure, socio-economic conditions, different land-uses and land allocation, seasonal calendar, resources of the village in the past and present. The first meeting was attended by 39 local people from six different villages and it was organized at the Chaung Naut Pyan village of the Tanintharyi Township. The second meeting (which was held at Myat Taw Win Hotel, Tanintharyi city) was attended by 30 participants who were representatives of local NGOs, INGOs, different Government Organizations and village organizations. It

was organized with the main objective of the development of community-based natural resource management (CBNRM) plan to support the trans-boundary biodiversity conservation. This time is the third village consultation in order to generate the draft version of community-based natural resources management plan. The meeting was held at at the Chaung Naut Pyan village of the Tanintharyi Township and 21 participants from four different villages joined the meeting. During the meeting, trend of natural resources, wealth ranking, sketch mapping for village landuses were conducted by the facilitation of project team members.

2.5 Agroforestry and Livelihood Improvement Training

Agroforestry and Livelihood Improvement Training (No. 2) was organized from 27 to 29 March 2019 at Forest Plantation Camp, Chaung Naut Pyan village, Tanintharyi Township, Myeik District, Tanintharyi Region. The main objective of this training is to improve the capacity of local communities in enhancing livelihood opportunities related to agroforestry which is one of the best landuse practices addressing drivers of deforestation, soil degradation, biodiversity loss and poverty issues. Twenty-one local people from six different villages participated the training. The training was designed to understand and raising awareness about the multiple benefits of agroforestry, various agroforestry design, community forestry and role of forests in addressing climate change related issues. Training participants were break-out into four group, and assigned to draw appropriate agroforestry designs based on their own land, and asked to make presentation group by group. This exercise helped us to better understanding of effective landuse practices and appropriate agroforestry designs in their own land as well as community forests.

2.6 Training of income generation to improve local livelihood (Bamboo-based handicrafts training)

In order to contribute income generation for local communities through systematic utilization of natural resources, bamboo based handicrafts training was organized. The training was held for ten days from 25th March 2019 to 3rd April 2019 at Chaung La Mu village, Tanintharyi Township, Myeik District, Tanintharyi Region. Fourteen participants from three different villages of Tanintharyi Township attended the training. Small-scaled Industries Department (SSID) under Ministry of Agriculture, Livestock and Irrigation (MOALI) collaborated to the successful accomplishment of the training by supporting two experts in making bamboo handicrafts.

2.7 The Consultation workshop on promoting biodiversity conservation in trans-boundary areas

The Consultation workshop on promoting biodiversity conservation in trans-boundary areas was held on 26th June 2019 at the Forest Research Institue, Yezin. In total, there were thirty-four participants who joined the workshop. Those participants represented their respective line ministries, INGOs and NGOs.

The workshop was organized to fulfill the following objectives;

1) To share the experiences among different organizations regarding trans-boundary biodiversity conservation, research and development activities;

2) To support the formation of communication mechanism among different institutions to initiate the trans-boundary biodiversity conservation programmes; and
3) To discuss the threats, opportunities and challenges which can be encountered during the implementation of trans-boundary biodiversity conservation and to provide the possible solutions.

2.8 Training on application of SMART Patrolling Tools to support establishment of Regular Patrolling System

Training on "application of SMART patrolling tools to support establishment of regular patrolling system" was held at Forest Research Institute, Auditorium from August 21 to 23 in 2019. The objectives of the Trainings were

(1) To develop the capacity of the staffs for initiating the biodiversity conservation of the trans-boundary area of Myanmar
(2) To equip staffs with the SMART patrolling tools which are essential to conservation of biodiversity
(3) To raise the awareness of the rules, laws, procedures of biodiversity conservation

At the Training, 25 trainees, including rangers from parks and wildlife sanctuaries under Nature and Wildlife Conservation Division and Forest Research Institute, Forest Department, attended the training.

2.9 Organizing a seminar on project progress and consultation meeting

A seminar on project progress and consultation meeting was held on 28th February, 2019 at the Director's Meeting Room of at the Forest Research Institute, Yezin, Nay Pyi Taw. Dr. Thaung Naing Oo, National Project Manager, Director of Forest Research Institute, Forest Department made a presentation on project progress, and discussed with the Researchers of the FRI and invited officials from the H.Q of Forest Department. Dr. Phyu Phyu Lwin, Project Secretariat, Staff Officer also presented about the workplan which was prepared to be implemented throughout the Project Period.

2.10 Organizing 2nd Project Technical Committee (PTC) Meeting

The 2nd Project Technical Committee – PTC Meeting was held on 30th Sept 2019 at the Meeting Room of the Director General's Office of the Forest Department, Nay Pyi Taw. U Kyaw Kyaw Lwin, Deputy Director General (Policy and Planning) of the Forest Department addressed opening speech at the second PTC meeting of FD-ITTO trans-boundary biodiversity conservation project. He firstly extended his warmest welcome to Dr. Hwan-ok MA, Projects Manager of ITTO, Dr. Youngtae CHOI, Programme Officer of ITTO, members of PTC and participants in the PTC meeting. He also expressed his great pleasure and honor to be a chair of this Technical Committee Meeting. On behalf of ITTO, Dr. Hwan-ok Ma, Projects Manager of ITTO, delivered his congratulatory remarks. Dr. Thaung Naing Oo,

National Project ManagerDirector of Forest Research Institute, Forest Department made a presentation on project progress and financial statement of FD-ITTO biodiversity project (PD 723/13 Rev.2 (F).

2.11 Land-use and land cover changes of the Tanintharyi Region by using satellite images and GIS software

Land use and land cover change is a major force of ecological change in tropical regions. The pattern and process of deforestation and forest degradation have thus received considerable attention in biodiversity conservation planning, ecological, socioeconomic, and policy studies to support effective management mechanisms. Realizing the need to provide information on the present status of forest cover change and deforestation rates of the past and present in the region and identify major land use and cover change areas for Tanintharyii region, Remote Sensing and GIS section of Forest Department conducted monitoring of land use and land cover of in and around Tanintharyii Region and creating wildlife corridor using 2005 Landsat 7 ETM, 2010 IRS Liss 3 and 2015 Lansat 8 imageries. And deforestation and forest degradation analysis was conducted by two areas; whole Tanintharyii Region, wildlife corridor by creating 10 km buffer area of sample villages. The results revealed that although rates of deforestation and forest degradation were decreasing within Tanintharyii area.

2.12 Training on Development of Community-based Ecotourism for Local Communities

This training was organized starting from 23rd September to 25th September, 2019 at Mya Pan Taw Win Hotel, Tanintharyi Town. The total number of (22) trainees who are residing within the project area (Yay Phyu Village, Chaung Naut Pyan Village, Chaugn La Mu Village and Aye Thar Yar Village) under Tanintharyi Township attended at the training. Lectures during training included community-based protected areas establishment and management, types of community-based ecotourism, current ways of practicing in Myanmar and other regional countries, community-based ecotourism in Tanintharyi Township and some potential spots, community forestry and potential community-based ecotourism, difference between travel and tourism, ecological based tourism, community-based ecotourism and the relevant policy, laws, rules, principles, and guidelines which support biodiversity conservation, potential ecological based tourism and protected areas in Myanmar, community-based ecotourism practices and process.

2.13 Regional-Level Workshop on Promoting Biodiversity Conservation in Trans-Boundary Areas of Tanintharyi Region

The regional level workshop was organized for the whole day on 26th September 2019. The venue was Green Eyes Hotel, Myeik, Tanintharyi Region. Forest Department of Ministry of Natural Resources and Environmental Conservation, line ministries and departments, INGOs and NGOs, local CSOs and representatives of local communities joined the workshop. In total, thirty-three participants attended and participated the whole day workshop. By this regional level workshop, we can

formulate the activities to be conducted in successful implementation of biodiversity conservation in trans-boundary areas of Tanintharyi Region, Southern Part of Myanmar. By brainstorming the strengths, weaknesses, opportunities and threats which can encounter in implementation of biodiversity conservation, the workshop can support not only to the successful accomplishment of the project but also to the upcoming implementation of future trans-boundary biodiversity conservation in Tanintharyi Region. In addition, it can also contribute to the current efforts of implementing Myanmar's Biodiversity strategies and action plans.

2.14 Consultation meeting to facilitate strengthening community-based organizations in conservation

The role of main stakeholder, local communities who are living around the project area, and their active participation play a crucial role in the conservation of biodiversity. In Myanmar, community forestry (CF) establishment is driving as a priority tool for community-based management process in the biodiversity conservation. Besides, establishment of protected areas and creating local livelihoods activities are effectively implementing with the participation of local people in the conservation of biodiversity and ultimately, for strengthening rule of law in the country.

With the objective of fulfilling the targeted activities of the project, "consultation meeting to facilitate strengthening community-based organizations in conservation" was organized to share and exchange information within different organizations for supporting biodiversity conservation. The meeting was held at Green Eyes Hotel, Myeik City, Tanintharyi Region on 27th September, 2019. A total number of 24 participants who representing different organizations such as community forest user groups, SMART groups, civil society organizations, non-government organizations (NGOs), private sectors and other relevant stakeholders was attended and participated in the consultation meeting.

2.15 Social development activities in the project area

In order to raise the awareness of the local communities as well as to enhance the people's willingness to participate in conservation activities in trans-boundary areas, social development activities were conducted during 2019. The activities involved contribution of furniture for schools and village committee, stationaries for students, organizing education talks for local communities as well as for students.

2.16 Training of protected area system, biodiversity conservation and habitat management

The venue of the training was Popa Mountain Park (Popa Wildlife Sanctuary) located at Mt. Popa, Mandalay Division. The duration of the training was three days from 25 to 27 November 2019. The trainers were experts from Forest Research Institute, Nature and Wildlife Conservation Division under Forest Department and WCS (Wildlife Conservation Society). We invited trainees working at different States and Regional Forest Departments, and those were Range Officers working on

biodiversity conservation, forest resources conservation and management and restoration of degraded forests and habitats for wildlife. In total, there are twenty trainees including five females and fifteen male trainees. They represent Forest Department of States and Regions including Karen State, Kachin State, Chin State, Mon State, Shan State, Tanintharyi Region and Mandalay Region, and Forest Research Institute and Nature and Wildlife Conservation Division. The lectures encompass management of protected area system in Myanmar, laws and legislations related with biodiversity conservation, theories and practices of biodiversity assessment including flora and fauna, and re-establishing natural habitats in Myanmar.

2.17 Organizing seminars on knowledge sharing and reporting project progress

During 2019, we organized seminars on knowledge sharing and reporting project progress for three times; 28th February 2019, 30th April 2019 and 31st July 2019. The first two seminars were at the Director's Meeting Room of at the Forest Research Institute, Yezin, Nay Pyi Taw. Dr. Thaung Naing Oo, National Project Manager, Director of Forest Research Institute, Forest Department made a presentation on project progress, and discussed with the Researchers of the FRI and invited officials from the H.Q of Forest Department. The first seminar was held with the objective of sharing knowledge on accomplishment of project activities during the reporting period among researchers of FRI and staff of Forest Department. The second seminar was organized to share the progress of assessment of ecotourism potential in Tanintharyi Township. The third seminar was held at Director General's office, Forest Department Head Quarter, Naypyitaw with the objective of knowledge sharing on findings of land-use and land cover change report and discussion on the way forward.

Year 3: 1st January – 31st March, 2020

3.1 Education talks

As one of the project activities, the education talks were held with the objectives of raising the conservation awareness of local people in Taninthayi Township, Myeik District, Taninthayi Region where the boundary is sharing with Thailand and promoting the conservation of biodiversity with the participation of local community. Those occasions were held on 5th March in 2020 at Thel Phyu village and Aye Tharyar village in Taninthayi Township, Taninthayi Region. In those events, about 90 local people from those two villages and nearby villages attended.

3.2 Ceremony for providing Community-based Natural Resource Management Plan

The data collection tasks were conducted in AyeThar yar village, Chaung La Mu village, ChaungNaukPyan village and TarPaLus village within Thein Kon village tract, Tanintharyi Township to prepare CBNRM plan for those villages. In order to provide

those community-based natural resource management plans, consultation workshop was held in village hall, Chaung Nauk Pyan village, Tanintharyi Township on 6 March 2020. In total, 35 villagers from four villages and staff from Forest Department of Tanintharyi Township attended the consultation workshop.

3.3 The 3rd Project Technical Meeting

The 3rd project technical meeting was held at Forest Research Institute, Yezin, Naypyitaw on 10th March 2020. Together with Dr. Hwan Ok Ma, Projects Manager of ITTO, Director of Forest Research Institute, and officials from Forest Department Head Quarter and Forest Research Institute attended the meeting. During the meeting, Dr. Thaing Naing Oo, Director of Forest Research Institute made a presentation on project progress and activities. Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute presented about the key findings of the researches conducted during the project period according to the planned project activities. In total, 27 participants attended the meeting, and four recommendations were made during the meeting.

3.4 Project Completion Workshop and International Day of Forests 2020

The project completion workshop was held on 20th March 2020 together with International Day of Forests 2020. The venue of the workshop was Auditorium, Forest Research Institute, Yezin, Naypyitaw, Myanmar. In total, fifty-five participants attended the workshop. Eight papers were presented during the workshop. Groups discussions were conducted to generate recommendations on development of ICCA (Indigenous Community Conserved Areas), livelihood security in trans-boundary areas, improvement of stakeholder engagement in biodiversity conservation, and proposed activities of biodiversity conservation.

Appendix 6: Record Photos of Project Activities

Year 1: 1st April – 31st December 2018

1.1 First Meeting of the Project Technical Committee (28.2.2018)

Welcoming speech by Dr. Nyi Nyi Kyaw, Director General of Forest Department

Participants attended at the Project Technical Committee Meeting

1.2 Project Inception Workshop (24.8.2018)

Delivering opening speech by U Zaw Min, Deputy Director General of Forest Department at the opening session of the Workshop

Group Photos of participants and delegates attending the opening ceremony of the Workshop

Presentation by Dr. Thaung Naing Oo, Director of Forest Research Institute

Group Discussion

1.3 SMART Training (5.9.2018-7.9.2018)

Lecture by Dr. Thaung Naing Oo, Director, Forest Research Institute

Lecture by U Hla Myo Aung, Assistant Director, Forest Research Institute

Group Activities of the trainees

Group Photos at the closing ceremony of the SMART training

1.4 Consultation meetings (8.9.2018 – 12.9.2018)

Presentation by Dr. Thaung Naing Oo, Director of Forest Research Institute

Group Photo at the consultation meeting

Consultation meeting at the village level, Thae Phyu village

Consultation meeting at the village level, Thein Khone village

Consultation meeting at the village level, Yephyu village

Consultation meeting at the village level, Aye Thar Yar village

1.5 Livelihood Improvement and Agroforestry Training (9-11 September 2018)

Lecture by Dr. Thaung Naing Oo, Director, Forest Research Institute

Lecture by Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute

Group Activities of the trainees

Group photos in the field

1.6 Socio-economic Survey

Socio-economic survey at the villages in Tanintharyi Township

Socio-economic survey at the villages in Tanintharyi Township

Socio-economic survey at the villages in Tanintharyi Township

Socio-economic survey at the villages in Tanintharyi Township

1.7 Public education and awareness talks (12-9-2018)

Public talk by the project staff of Forest Research Institute

Local people attending the public talk

Public talk (29-9-2018)

Public talk by the project staff of Local Forest Department, Tanintharyi Township

Public talk by the project staff of Local Forest Department, Tanintharyi Township

1.8 Biodiversity Conservation, Protected Area and Habitat Management Training

Participants at the opening ceremony of the training

Group Photos at the opening ceremony of the training

Lecture by Dr. Thaung Naing Oo, Director, Forest Research Institute

Lecture by Dr. Naw May Lay Thant, National Landscape Coordinator, Wildlife Conservation Society (WCS)

1.9 Plant biodiversity survey

Setting plot for Plant Inventory

Measuring height of tree with tree' height measurement tool

Collecting soil sample in the plot

Measuring DBH of tree in the plot

1.10 Survey on Non-timber Forest Products

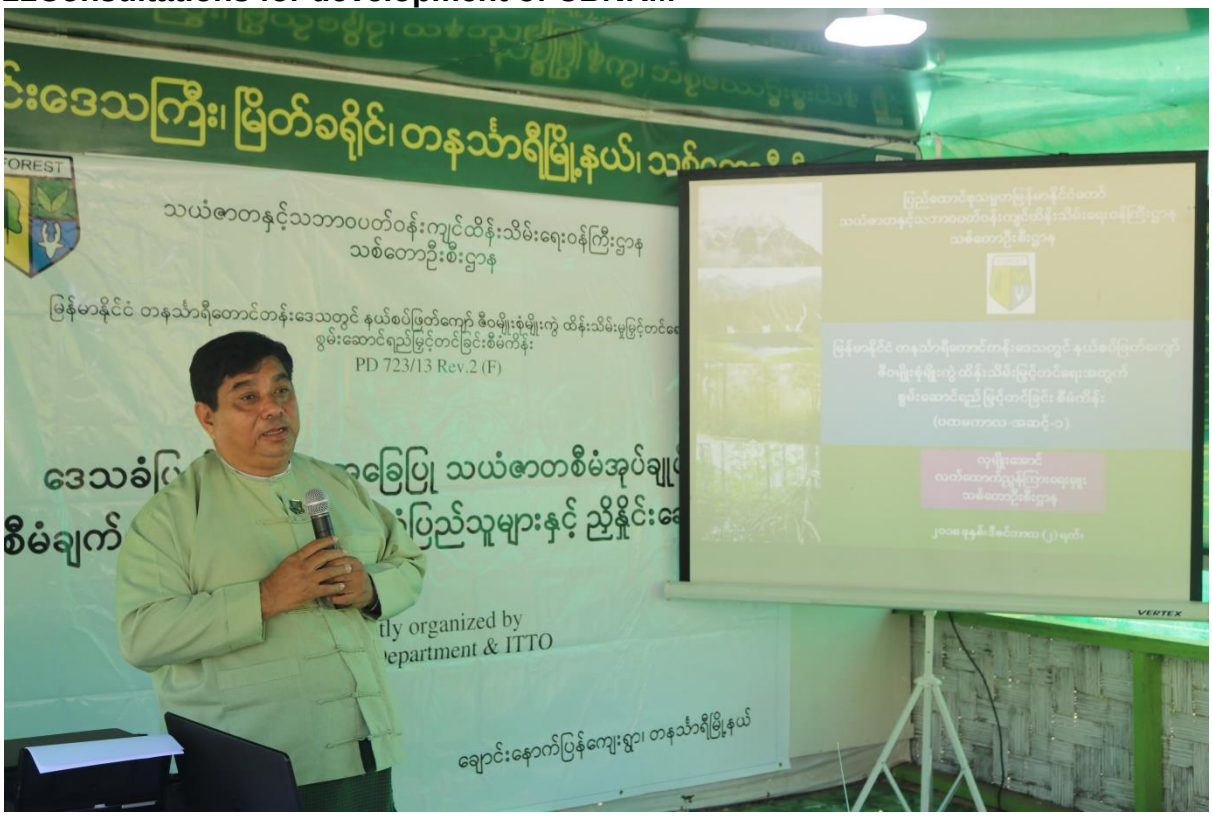
Non-timber Forest Product Survey at the villages in Tanintharyi Township

Non-timber Forest Product Survey at the villages in Tanintharyi Township

Presentation Project’s Profile before Non-timber Forest Product Survey

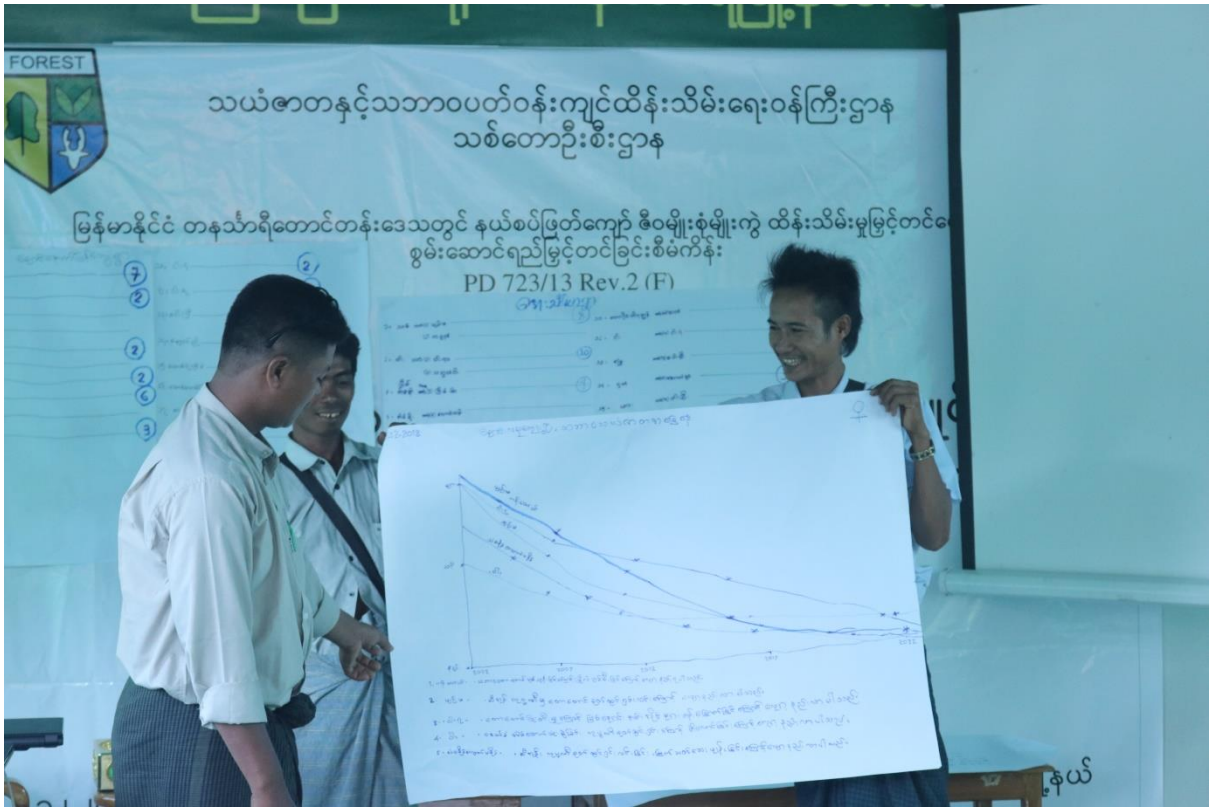
Non-timber Forest Product Survey at the villages in Tanintharyi Township

1.11Consultations for development of CBNRM



Presentation by U Hla Myo Aung, Assistant Director, Forest Research Institute

Group Activities of the meeting



Presentation by group in the meeting

Group photos at the opening ceremony of the meeting

Year 2: 1st January – 31st December 2019

2.1 Wildlife Survey

Orientation for participatory assessment of wildlife species abundance

Focused group discussion

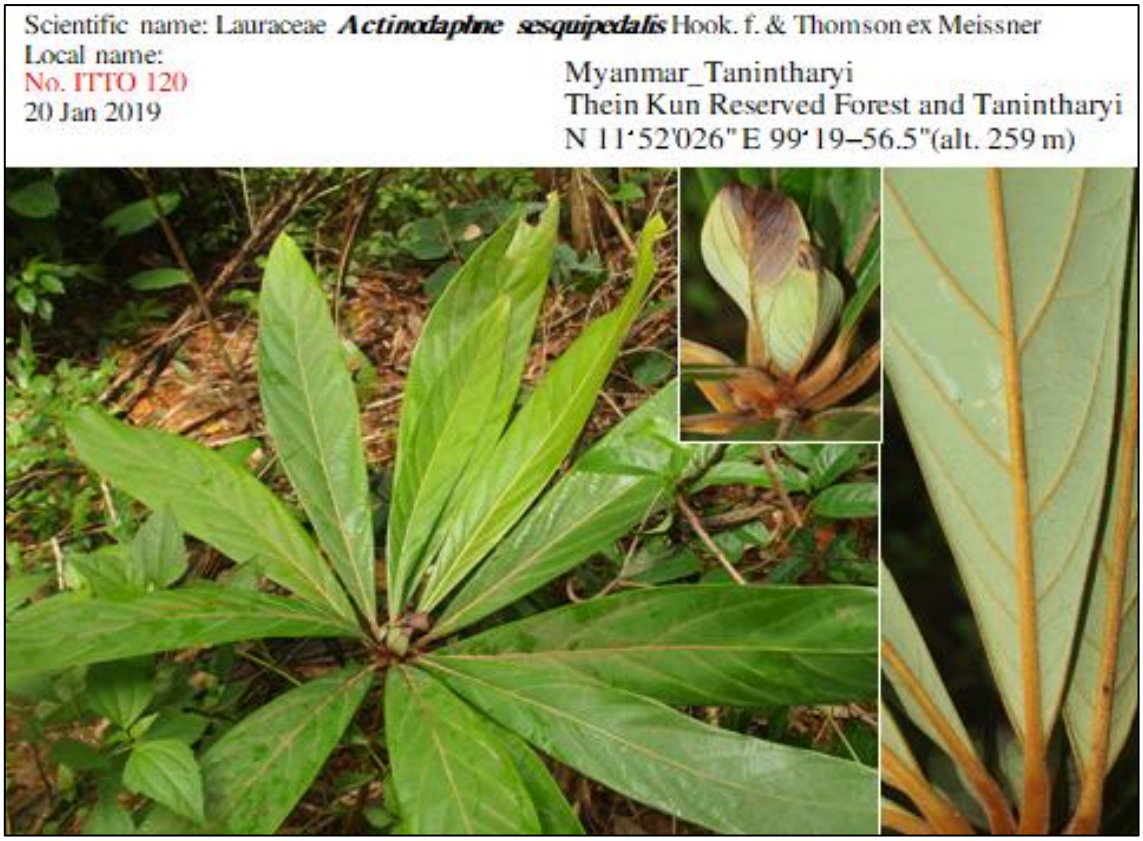
Wildlife recorded by camera trap

Wildlife recorded by camera trap

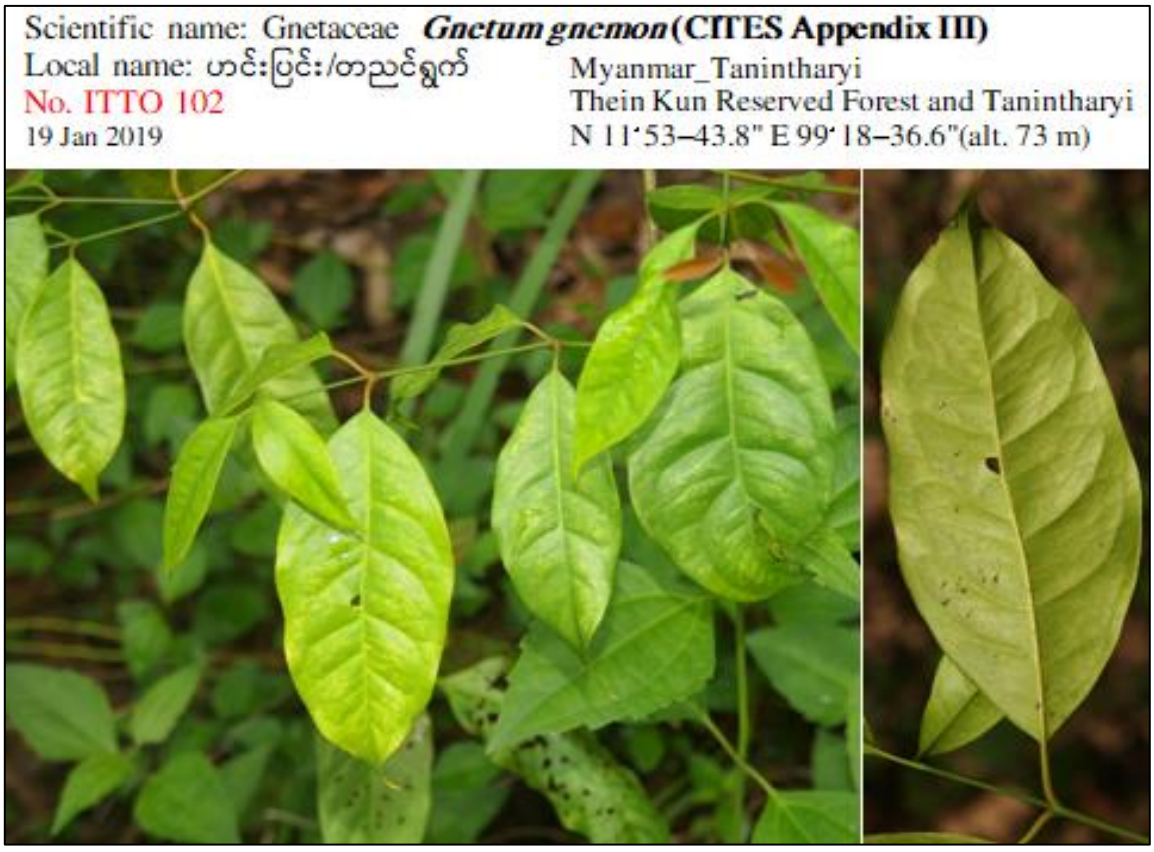
2.2 Plant biodiversity survey

Measuring tree’s dbh in forest inventory

Specimens Collection



Actinodaphine sesquipedalis sp. is found in Tanintharyi



Gnetum genmon sp. is found in Tanintharyi

2.3 Public education and awareness talks

Presentation by Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute

Activities in Education talk

Participants attending the education talk

Participants attending the education talk

2.4 Consultation meeting for the development of community-based natural resource management (CBNRM) plan

Group photo at the opening ceremony of the meeting

Group Activities of the participants

2.5 Agroforestry and Livelihood Improvement Training

Group photo at the opening ceremony of the training

Lecture by U Hla Myo Aung, Assistant Director, Forest Research Institute

Lecture by U Tun Tun Win, Staff Officer, Forest Research Institute

Group activities of the trainees

2.6 Training of income generation to improve local livelihood (Bamboo-based handicrafts training)

Presentation by Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute

Group Activities of the trainees

Group Activities of the trainees

Handicrafts made by the trainees

2.7 The Consultation workshop on promoting biodiversity conservation in trans-boundary areas

Delivering opening speech by U Kyaw Kyaw Lwin, Deputy Director General of Forest Department at the opening session of the Workshop

Group Photos of participants and delegates of the Workshop

Presentation by Dr. Thaung Naing Oo, Director, Forest Research Institute

Group Activities of the participants

2.8 Training on application of SMART Patrolling Tools to support establishment of Regular Patrolling System

Delivering opening speech by U Kyaw Kyaw Lwin, Deputy Director General of Forest Department at the opening session of the training

Group Photos of participants and delegates attending the opening ceremony

Lecture by Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute

Group activities of the trainees

2.9 Organizing seminars on project progress and consultation meeting

Presentation by Dr. Thaung Naing Oo, Director, Forest Research Institute

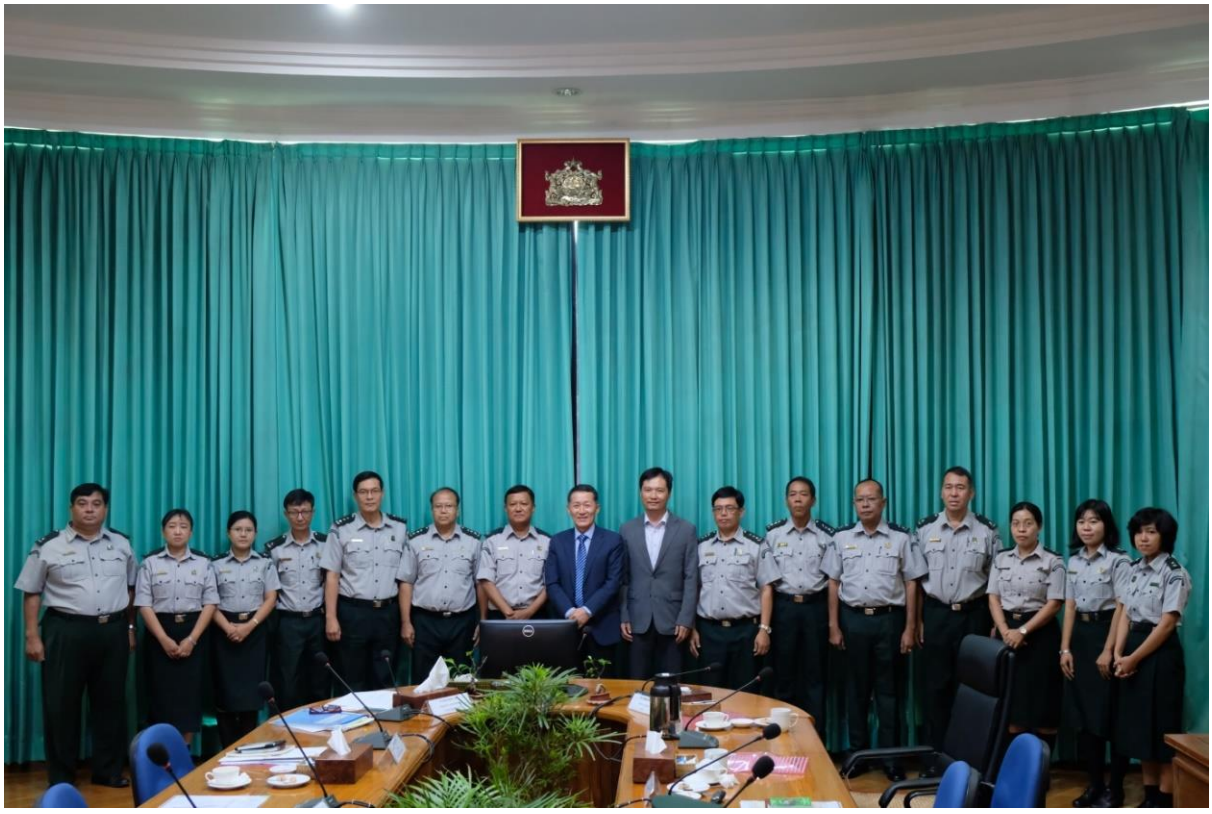
Presentation by U Hla Myo Aung, Assistant Director, Forest Research Institute

2.10 Organizing 2nd Project Technical Committee (PTC) Meeting

Opening speech by U Kyaw Kyaw Lwin, Deputy Director General of Forest Department

Presentation by Dr. Thaung Naing Oo, Director, Forest Research Institute

Discussion by Dr. Hwan-ok MA, Projects Manager of ITTO



Participants attended at the 2nd Project Technical Committee Meeting

2.11 Land-use and land cover changes of the Tanintharyi Region by using satellite images and GIS software

Presentation by Dr. Thaung Naing Oo, Director, Forest Research Institute

Presentation by Dr. Myat Su Mon, Deputy Director, Forest Department

2.12 Training on Development of Community-based Ecotourism for Local Communities

Group photo at the opening ceremony of the training

Lecture by Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute

Lecture by U Tun Tun Win, Staff Officer, Forest Research Institute

Group activities of the trainees

2.13 Regional-Level Workshop on Promoting Biodiversity Conservation in Trans-Boundary Areas of Tanintharyi Region

Delivering opening speech by U Phe Chit, Director of Forest Department at the opening session of the Workshop

Group Photos of participants and delegates attending the opening ceremony of the Workshop

Group Activities of the participants

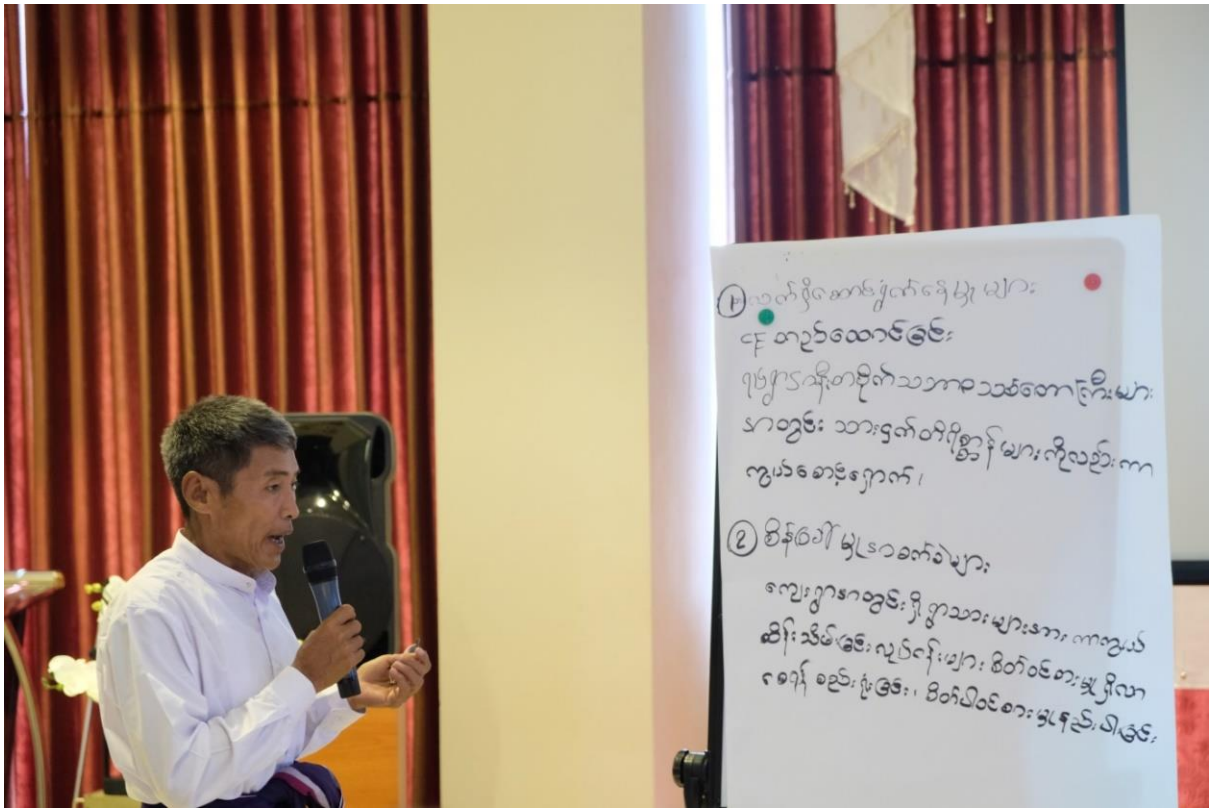
Group activities of the participant

2.14 Consultation meeting to facilitate strengthening community-based organizations in conservation

Presentation by Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute

Presentation by U Myo Oo, Chairman of Green Network

Group Activities of the participants



Group Activities of the participants

2.15 Social development activities in the project area

Participants attending the education talk

Contribution of furniture, and stationaries for school

Contribution of furniture for village committee

Presentation by Dr. Phyu Phyu Lwin, Staff Officer, Forest Research Institute

2.16 Training of Protected Area System, Biodiversity Conservation and Habitat Management

Delivering opening speech by Dr. Nyi Nyi Kyaw, Director General of Forest Department at the opening session of the training

Group Photos at the opening ceremony of the training

Lecture by Dr. Thaung Naing Oo, Director, Forest Research Institute

Awarding certificate of the training completion to a trainee

2.17 Organizing seminars on knowledge sharing and project progress

Presentation by Dr. Thaung Naing Oo, Director, Forest Research Institute

Presentation by U Hla Myo Aung, Assistant Director, Forest Research Institute

Poster exhibition at International Day of Forests 2019

2.18 Photo records of the publications

Some publications of the project during 2019

Booklet of Invasive Alien Species

Year 3: 1st January – 31st March, 2020

3.1 Education talks

Dr. Inkyin Khaine (Assistant Director, FRI) delivering the opening speech

Ye Lwin Aung (Range Officer, FRI) talking about the orchid species diversity and its conservation in Myanmar

U Aung Thiha Zaw (Staff Officer, FD, Taninthayi Township) giving a talk on procedures for establishing CF and people's participation in eliminating illegal logging


Villagers attending the education talk

3.2 Ceremony for providing Community-based Natural Resource Management Plan

Participants attending the ceremony

Dr. Ingyin Khine (AD, FRI) presenting the discussion topic

U Kaung Set Naing (RO, FD of Tanintharyi Township) presenting the discussion topic

Offering Community-based natural resource management plan books

3.3 The 3rd Project Technical Meeting

Discussions at the 3rd Project technical meeting

Participants joining the meeting

Presentation by Dr. Thaung Naing Oo, Director of FRI

Presentation by Dr. Phyu Phyu Lwin, Staff Officer of FRI

3.4 Project Completion Workshop and International Day of Forests 2020

Opening speech by Dr. Nyi Nyi Kyaw, Director General of Forest Department

Delegates and participants attending at the opening ceremony

Presentation by Dr. Thaung Naing Oo, Director of Forest Research Insitute

Group Discussions