Darwin Initiative Main and Post Project Annual Report

To be completed with reference to the "Writing a Darwin Report" guidance: (http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Submission Deadline: 30th April 2019

Darwin Project Information

Project reference	25-005
Project title	Enabling ecosystems to deliver sustainable development goals at Lake Indawgyi
Host country/ies	Myanmar
Lead organisation	Fauna & Flora International (FFI)
Partner institution(s)	• Nature and Wildlife Conservation Division (NWCD), Forest, Department (FD) • Indawgyi Environment and Development Association (IEDA) • Mohnyin Natural Greening and Development Association (MNGDA) • Indawgyi Natural Farming Association (INFA) • Inn Chit Thu • Wetlands Work
Darwin grant value	329,590 GBP
Start/end dates of project	Start date:1 July 2018 End date: 31 March 2021
Reporting period (e.g., Apr 2018 – Mar 2019) and number (e.g., Annual Report 1, 2, 3)	July 2018 to December 2018 and Annual Report 1
Project Leader name	Frank Momberg
Project website/blog/Twitter	
Report author(s) and date	Ngwe Lwin, 27 June 2019

1. Project rationale

Lake Indawgyi, a Ramsar site, is Myanmar's most important wintering ground for >20,000 water birds. Indawgyi's wetlands support significant populations of threatened species: Sarus crane (VU), Woolly-necked stork (VU), Peacock softshell turtle (EN), Hog deer (EN), and threatened fish species, including 6 newly-described endemics. Watershed forests support Chinese pangolin (EN), Asiatic black bear (VU), Sun Bear (VU), Dhole (EN), Shortridge's leaf monkey (EN), Eastern hoolock gibbon (VU), Rufous-necked Hornbill (VU). White-rumped and Slender-billed vultures (CR) are also present.

This rich biodiversity is under threat from multiple pressures. Unsustainable firewood collection, illegal timber extraction, and agricultural encroachment in the upper watershed are causing soil erosion and sedimentation. Traditional low-input rice production is being replaced by chemical fertilizers and pesticides which are threatening the fish and bird species in the lake. Poor sanitation facilities are an additional, severe and increasing source of pollution in the wetlands. Elsewhere, at Lake Inle, chemical fertilizers and degradation of the watershed have caused the lake to silt by 2m, and rendered the lake water unsafe for drinking, threatening biodiversity and human health. It is imperative that we learn from this situation and take early mitigating action at Lake Indawgyi.

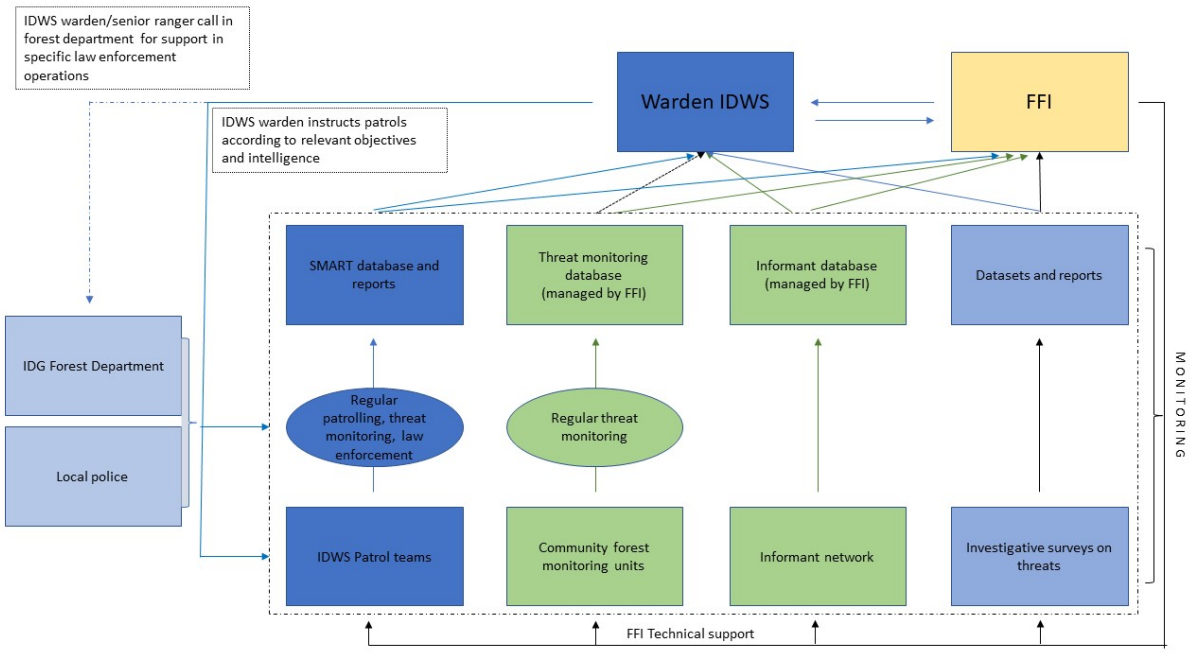
The livelihoods of 30,000 indigenous people depend on ecosystem services provided by Indawgyi's wetlands and forests. Most poor households undertake agricultural activities; farm sizes are small and many households lack sanitation. Addressing their urgent development needs is essential to promoting human health, economic development, and protecting the unique biodiversity of this globally important wetland.

2. Project partnerships

1. Nature and Wildlife Conservation Division (NWCD), Forest, Department (FD)

The capacity of the NWCD management unit for Indawgyi Lake Wildlife Sanctuary/ Indawgyi Biosphere Reserve (IBR) has significantly been improved in the following fields:

1.1. FFI supported the development and improvement of the overall collaborative law enforcement system.



FFI has developed improved guidelines for SMART patrolling, provided class room and on-the-job training in collaborative SMART patrolling, which included threat monitoring, intelligence work, patrolling and law enforcement. Intelligence gathering has been significantly improved through the establishment of informant networks, patrol coverage has significantly increased, as well as law enforcement.

1.2. FFI has supported annual drone based monitoring of encroachment in the critical wetland habitats of the Indaw Chaung seasonally flooded grasslands. Encroachment has been significantly reduced due to a comprehensive awareness and collaborative patrolling campaign.

1.3. FFI supported the establishment of joint lake patrols of NWCD rangers with township fisheries departments officers, which has led to increased capacity of fisheries department officers and NWCD rangers to patrol and enforce fisheries laws, in particular of the no-take zones in the lake.

2. Indawgyi Environment and Development Association (IEDA): Community forestry/ Mohnyin Natural Greening and Development Association (MNGDA).

FFI has continued to support IEDA and MNDGA through technical/ financial and administrative small grant management training and small grant support to expand community forestry and agroforestry.

3. Indawgyi Natural Farming Association (INFA):

FFI has provided comprehensive training to INFA and its members for organic rice farming techniques and the 'participatory guarantee system - PGS' for organic farming. 101 INFA members participated in the training, 59 farmers passed the PGS Myanmar organic certification.

4. Inn Chit Thu:

FFI's partner wetland work has trained an Inn Chit Thu team in the development of household waste water handy pot systems. The construction of household waste water treatments systems in the flood prone zone of Indawgyi lake is ongoing.

Inn Chit Thu also received hospitality training and training for the management of the newly opened visitor education centre.

3. Project progress

3.1 Progress in carrying out project Activities

Outputs:

1. A decentralised and collaborative management committee and mainstreamed ecosystem services approach places the Indawgyi Lake Biosphere Reserve under management systems that respect integrated development and biodiversity needs

1.1 Facilitate regular meeting of the Biosphere Reserve Indawgyi management/ stakeholder committee (quarterly)

During the nomination process for the Biosphere Reserve, the state government formed the Indawgyi wildlife sanctuary management support group at Kachin state level, Mohnyin district level and Mohnyin township level. These committees consist of all relevant government departments (e.g. forestry, fisheries, agriculture, land records, general administration, environment), NGOs and local community representatives chaired by the State Minister of Natural Resources and Environmental Conservation at state level and by the General Administration Department officers in district and township level committees. The first district level first stakeholder committee meeting was organized in Mohnyin on July 5th 2018 to discuss stakeholder collaboration for law enforcement and patrolling in Indawgyi biosphere reserve. The meeting included 70 participants from 11 government departments, and 6 from CSOs and local community representatives.

1.2 Facilitate regular meeting of the Indawgyi civil society network (bi-annual)

The first CSOs network meeting was organized at Indawgyi Wetland Education Center with the members from Innchithu, Indawgyi Natural Farming Association, Parami Waste management group and Indawgyi Conservation and Development Association on 4 Nov 2018. A total of 10 participants joined and each CSOs shared their activities and challenges during the meeting. The second meeting was organized on 20th January 2019 to discuss the waste management plan for the Shwe Myint Zu Pagoda festival to be held in March 2019. Parami group shared their experience of waste management at the pagoda festival in 2017 and discussed the potential collaboration with local authorities for the waste management at the pagoda festival.

1.3 Facilitate regular meetings of law enforcement agencies (forest department, Indawgyi wildlife sanctuary/ biosphere reserve management authority, fisheries department police).

FFI facilitate regular meeting with both forest and fishery departments. Both departments also had regular meetings with the police for patrol and law enforcement planning and coordination.

1.4 Recruit and train local informant network

A village based informant network was set up in January 2018 to support the collaborative law enforcement in the Indawgyi Wildlife Sanctuary. The informant network provides intelligence on forest crime, supporting collaborative patrol units in their actions against illegal logging operations inside the IDWS. The number of informants increased continuously and by the end of 2018, some 50 villagers have provided information on forest crimes at some point of time. 15 informants, all of them running their own networks with numerous sources of information, provide information on a regular basis.

1.5 Recruit local community rangers
Altogether five community rangers were recruited during the reporting period to participate in regular patrolling and law enforcement operations by the Indawgyi wildlife sanctuary authority and the fisheries department. The following process was undertaken for the recruitment of the community rangers;

1. Set up the requirement of the candidate
2. Announcement in villages located in Indawgyi biosphere reserve
3. After 2 weeks, prepare shortlist for interviews of suitable candidates
4. Conduct interviews for shortlisted candidate together with forest department and fishery department.
5. Contract with the selected candidate for initially one year

1.6 Establish two collaborative patrol units (5 pax each), including wildlife sanctuary rangers and community rangers for forest patrols
The forest department (Indawgyi wildlife sanctuary) established two collaborative patrol units including community rangers for forest patrols in early 2018 and the project continued to support these units. The patrol units received the refreshment SMART patrolling training in November 2018.

1.7 Establish collaborative lake patrol team (fisheries department, WS, community ranger)
Started from January 2019, both Indawgyi wildlife sanctuary and fishery department conducted collaborative patrol on the lake and indawgyi chaung river. FFI in collaboration with the fisheries department organized village meetings to inform the rule and regulation of the fishing in the lake and river.

1.8 Provide basic field equipment (GPS/ cameras/ field gear)
The lake patrol team was equipped with GPS, cameras, spotlights and in February 2019 for the collaborative lake patrol.

1.9 Provide initial SMART patrolling training to collaborative patrol units, on the job training first 3 month.
Class-room and on-the-job training was conducted to train collaborative lake patrols under the leadership of the Department of the Fisheries. One community ranger was recruited, and another FFI volunteer has been participating in the patrols. A SMART training workshop for lake patrols was conducted on the 4th and 5th February 2019. After the training, a patrol plan for regular patrols was developed and implemented in February and March. Apart from threat monitoring and basic law enforcement activities, the scope for patrolling in February was to conduct awareness raising in villages around the IDG lake to reach as many fishermen as possible. 10 patrol days were spent in the field, patrolling the lake and conservation zones, as well as several rivers.

1.10 Provide SMART refresher training
Refresher training (class room & on-the-job) was provided to the IDWS forest patrol members (9 forest rangers and two community rangers) throughout 9 days in November 2018. The main topics were: a) effective law enforcement responding to the most immediate threats (illegal logging/ fire wood extraction), patrol planning and interventions based on intelligence reports, improved law enforcement responses (including arrest procedure, multiple day rather than short-term patrols).

1.11 Monthly collaborative SMART patrols, operate informant network
Regular patrolling and law enforcement are conducted by the Indawgyi Wildlife Sanctuary (IDWS) supported by one community ranger for each patrol. Two forest patrols operated during the dry season months and one patrol team operated throughout the rainy season. In both seasons one IDWS lake patrol team operated on the Indawgyi Lake and Indaw Chaung river.
As of July, there are 10 key informants based in different villages, who regularly provide information on forest crime. The wider informant network encompasses about 30 people, who occasionally or on demand provide additional information.

1.12 Annual UAV monitoring of encroachment and illegal logging areas
FFI GIS team; Carl Reader, Myo Myint Aung and Thein Zaw Latt conducted UAV monitoring between 24 and 31 March 2018 along the Indaw river to record the land cover change along the river. The data has been compared with the UAV record from last 2 years; 2016 and 2017. The photo showed that there is no new fields along the river but about 248 acres of newly burnt grassland was recorded. This has documented the improved effectiveness of awareness raising and patrols related to the Indaw chaung.

2. Community forestry and agroforestry in designated buffer zones of Lake Indawgyi Biosphere Reserve reduce deforestation and forest degradation, while maintaining access to essential natural resources.

2.1 Establish forest user groups
To reduce deforestation and forest degradation in the watershed, to protect forest biodiversity and to prevent downstream sedimentation through community-based forest protection, the project initiated the community forestry program in the designated buffer zones together with Indawgyi Environment and Development Association (IEDA). After the village awareness meetings on the community forestry and forest protection, the project team facilitated formation of forest user groups (FUG) with a total of 539 households in nine villages which located closed to the designated buffer zone during the reporting period. The FUGs will carry out the tree seedlings production and tree planting during the coming rainy season (July-September).

2.2 Train forest user groups in forest inventory and forest management planning
No activity during this reporting period.

2.3 Forest inventory and forest management planning
No activity during this reporting period.

2.4 Train FUGs in tree nursery development
The basic nursery development and management training was conducted in May to produce seedlings. A total of 27 participants from 9 CF groups join the training.

2.5 Establish and male nurseries operational
All FUGs established nurseries in June to produce tree seedlings.

2.6 Train FUGs in reforestation/ agroforestry techniques
No activity during this reporting period.

2.7 Establish woodlots and agroforests
No activity during this reporting period.

2.8 Facilitate community forestry certification?

No activity during this reporting period.

3. Organic rice farming and value-adding practices result in certified organic products that provide income to at least 200 households and protect wetland biodiversity

3.1 Undertake participatory consultation with farmers to establish their knowledge and priority learning needs (knowledge baseline)
There are over 2,000 farmers in the villages surrounding Lake Indawgyi, from which 101 farmers are involved in the organic project and members of INFA. 59 farmers have managed to pass PGS Myanmar organic certification in December 2018. The entire harvest has been sold, demonstrating that there is a demand for organic, a potential for a small premium price, providing sufficient incentives for more farmers to convert to organic rice production, and helping to achieve the conservation objective of reduced chemical runoff into the Lake.

The project has been designed to focus on rice, given the increasing global demand for organic rice and gluten free products, as identified in 2016 by J. Rosenkranz, and the importance of the rice crop in Myanmar and Indawgyi's agricultural landscapes.

On behalf of the project Dr. Than Than Sein, organic rice expert, and her team consulted farmers and provided organic farming training in July, August, November, December 2018 and March 2019.

Detailed focus groups discussion were undertaken with 100 farmers who are members of the participatory grantee system (PGS) groups from 12 villages in the project area.

3.2 Develop training resources that are targeted to the farmer learning needs identified in 3.1, and pilot
Two different types of training were developed for the PGS farmers by Dr. Than Than Sein's team in Indawgyi area: 1) training for internal control system in which each PGS farmer group conducts internal control within the groups to make sure that no member utilizes chemical fertilizers or chemical pesticide at any stage of the agricultural cycle, 2) training for production of inputs, such as compost, rice husk vinegar (organic pesticide), fermented rice bran for weed control, enhanced microorganisms (EM), super Bokashi and Bokashi as natural fertilizers. Moreover the training for improving post-harvest handling practices was also conducted before the harvesting time in late October 2018.
3.3 Roll out amended training modules and offer refresher training
The training courses both class-room and on-the-job training on the internal control systems and the production of natural fertilizers and natural pest control were organized in June (106 farmers participated), July: (61 farmer participants) and August: (59 farmer participants). The courses were taught by Dr. Than Than Sein, an organic expert and her team members.
3.4 Review the governance structure and capacities of INFA and identify priority development needs to enable scale-up, pending the anticipated new membership numbers.
The review the governance structure and capacities of the INFA was conducted by FFI expert Christina Archer in December 2018. Focus groups discussions were conducted with both INFA management committee members, and members to learn about their structure, capacities and suggestions for improvements. Christina stated "INFA members did not raise any immediate concerns, and showed good levels of understanding by members on the purpose, structure and governance of the group." The following action points were suggested to improve INFA:
Action point: FFI to contact organizations who have a track record in managing community based loans/micro finance (e.g. BRAC, Care) to ask for technical support to INFA to initiate and manage micro credit schemes.
Action point: FFI to contact organizations who can provide training for business planning/ operation.
Action point: INFA members to adopt new data collection system on inputs; explore possibility of bulk purchase of inputs (e.g. EM). Also confirm what is needed to buy new seeds/ varieties for the 2019/2020 season; contact Department of Agriculture to buy organic seeds in bulk, to ensure farmers are using a confirmed and untreated variety.

Action point: Review truck prices and transport costs in the Business Plan ('Transport' on page 57): establish which size and model would be most commonly used, and can be easily repaired locally.
Action point: A traceability system needs to be set up no later than January 2019 and be robust to ensure EU certification.

3.5 In consultation with INFA and the organic certifier, agree timeline and responsibilities for the certification process
During the project preparation period INFA members already agreed to establish the certification process with the support of Myanmar Organic Grower and Producer Association (MOGPA). PGS organic certificate granted by MOGPA can be applied by practicing an internal control system similar to the EU requirements for organic group certification. The internal control system will apply during the whole process of rice cultivation such as seed selection, preparing seed bed, transplanting, harvesting, drying and storage and cover as well any secondary crop, such as soya beans in the dry season.

3.6 Train internal auditors
FFI introduced the participatory grantee system (PGS) for the farmers in Indawgyi to apply organic certification. PGS farmers were formed in groups of 5 to 10 farmers to apply internal control systems for their chemical free agricultural practice. The farmers groups were trained to by Dr. Than Than Sein and her team in June, July and August 2018.

3.7 Revise and update the INFA governance structures and financial control mechanisms
Based on the assessment of Christina Archer, there was no need to revise the INFA governance structures. However the project supported the improvement of the financial management system by providing basic book keeping training and facilitating the appointment of two finance staff.

3.8 Establish supply chain control points for rice and rice flour
Two different supply chains were established after the harvesting period: distribution in the regional market and distribution in Yangon market. With the support of the project, INFA members milled the rice and distributed the organic rice within the Indawgyi area while an FFI market development consultant carried out national level market assessment in Yangon and Mandalay. Wolf's kitchen from Yangon purchased Black sticky rice from Indawgyi. For the international market, Sun Land and ECOMA have expressed interest in exporting certified organic rice. The first order is expected before the year's harvest if they are able to find buyers for the Indawgyi rice and the EU certification is completed.

3.9 Set up and prepare for physical installation of flour mill
N/A

3.10 Procure flour mill
N/A

3.11 Deliver training on flour mill use and maintenance
N/A

3.12 Develop and agree with INFA and Shan Maw Myae the detailed 3 year business plan
N/A

3.14 According to the business plan, identify the priority investments/ infrastructure/ capacities required and support INFA and Shan Maw Myae to address these
N/A

3.15 According to business plan, establish local sales distribution systems for rice and rice flour
N/A

3.16 Support INFA to produce and sell rice and rice flour
N/A

3.17 Base and end line surveys on household incomes and expenditures related to farming
N/A

4. At least 1,000 households (c. 5,400 people) participate in community waste collection and safe disposal; at least 200 households (c.1,000 people/ approx.50% of all HH in flood prone areas) benefit from improved sanitation systems in flood prone areas with eutrophication problems

4.1 Develop a core team between Inn Chit Thu and Wetlands Work. Develop a HandyPod training programme for construction training and sanitation marketing using informational materials, presentations, workshops, field work, and demonstration sites
Poor sanitation facilities are an additional, severe and increasing source of pollution in the wetlands. Therefore the project introduces improved household sanitation and community-based waste management in flood-prone areas around the lake to reduce pollution and prevent eutrophication.
In November and December 2018, the project team discussed with a local business operator for the sanitation project and organized training for the handy pod construction at two households in Lonton villages.

4.2 ID and train local business operators from the target villages who serve the HandyPod's supply side elements
Three villages (LonTon, Hepa and Nawanpin) were selected for the sanitation program in flood-prone areas over the next 30 months. Each village has HHs (households) with pit latrines that families cannot use for at least 3 months during high water season. The survey by ICT found a total of at least 51 families had no latrine use during the flood season. In most cases, neighbor latrines are used during these months. This may cause inconvenience and some social friction, especially if users are not relatives as was mentioned by several families.
Within the three target villages there are more than 122 flooded households; 23 of these have no sanitation (see Category A, below) and 51 are not usable during the 3 month flood season.

4.3 Organise a Sanitation Raffle (lucky draw) for flood-prone households in each target village involving various leadership levels; promotion, prizes, events coordination
N/A

4.4 Install winning HandyPods in dry season
N/A

4.5 Provide faecal sludge management guidance and demonstrations
N/A

4.6 Monitor and evaluate initial target village strategies; adapt as needed
N/A

4.7 Explore and specifically define broader scale up of sanitation activities around Lake Indawgyi
N/A

4.8 Establish baseline information: nearshore pathogens (E. coli) and algal mat density in Year I wet and dry season
Drone trial on Dec 15 2018 – Taber Hand and Thet Zaw Tun, drone pilot out to algal mat area – Nwaungpin – done but no algae. Lonton – done and found algae – Results look very doable in correct algae season with late afternoon sun angle and very calm water.

4.9 Develop waste management awareness materials
Communications with local leaders and homeowners about the program, including 2 stages for flooded and non-flooded HH, and urine collection program: The FFI team met with Mohnyin District head, village chiefs to raise awareness and government approval for improving household sanitation. FFI, Wetland Works and the local partner Inn Chit Thu produced 2 demonstration household sanitation systems (Handy Pods) in collaboration with the households.

4.10 Implement waste management awareness campaign
Plastic waste is one of the key issues in the Indawgyi area for the water pollution in the lake and the in-let rivers. A two days awareness campaign for the waste management was conducted at Nan Mon village together with local authorities, high school and villagers from the 18th – 19th January 2019. On the first day, the presentations on the waste management were presented to three hundred students at the school and on the second day, about 250 students and villagers collected plastic waste around the villages. On 20 Feb 2019, a demonstration of improved residual waste burning by using a waste burning cage was conducted at Nan Mon village for the public.

4.11 Facilitate establishment of village-based waste management systems, identify supply chain for recycling materials
According to FFI's rapid assessment solid waste, in particular plastic waste is one of the main causes in Indawgyi for the water pollution in the lake and in-let rivers because the waste from household and commercial sources were dumped into the lake and the river due to a lack of designated land fill sites and a complete waste lack of waste collecting systems.

FFI assisted the local Parami funeral association to set up a village waste management group in Nan Mon village and to operate the waste collecting with a small waste truck in the village and dispose the waste in a dedicated village landfill site. The project provided financial support to the group to extend their activity to three more villages: Maing Naung, Sanwinkone/Innthar and He par. Since December 2018, the waste truck is also collecting waste of those three villages once a week. Operational costs are financed by voluntary donations from local users.

4.12 Establish village land fill sites for safe disposal of waste
The project supported the Parami group to collaborate with Maing Naung village waste group and Sanwinkone/Innthar waste group to establish village land fill sites for their respective villages. The sites were selected outside of the villages with formal approval from village authorities.

4.13 Provide support to the new waste collection system

Same as 4.11

3.2 Progress towards project Outputs

The project this year is progressing well except one activity 3.9 Set up and prepare for physical installation of flour mill is being delayed since the team focused on production of organic rice this year.

3.3 Progress towards the project Outcome

Participatory management systems, sustainable natural resource use and improved sanitation bring biodiversity benefits to the Indawgyi Lake Biosphere Reserve and livelihoods and health benefits to more than 10,000 residents.

1. By the end of 2019, a collaborative management committee for Indawgyi Lake Biosphere Reserve will be established and operating

   The first district level meeting was organized in 2018 with the management committee and community representatives. The park warden of Indawgyi biosphere reserve who is a secretary of township level management committee has since been organising regular meetings with support from the project in particular to seek collaboration from the relevant government department for law enforcement.

2. Number of resident water-birds is stable or increasing throughout the project period (including increasing number of Sarus cranes, VU, feeding in the paddy fields as an indicator species)

   The mid-winter counts and monthly counts were conducted by the ornithologists from the Indawgyi wildlife sanctuary with support from FFI and Innchitthu to monitor the water bird population in the lake and surrounding wetlands. Based on the 2019 mid-winter count data, the population of water bird species is stable.

3. At least 200 farming households (c.1,000 people, 50:50 male/ female) adopt organic farming practices near lakeshore areas with eutrophication problems, by the end of the project

   In 2018, 106 farmers from 11 villages followed the organic farming practice (Participatory Grantee System (PGS)) for their rice farming and second crops: peanut and soy bean on more than 800 acres. INFA will organize at least additional 100 farmers to join the PGS farming practice in 2019/2020.
   To monitor the effect of eutrophication to the lake, Wetland Works conducted an initial assessment in December 2018 by using a Drone to map the extent of algae growth along the lake shore. The assessment will be repeated on an annual basis by Wetland Work, Inn Chit Thu and FFI together.

4. By December 2020, at least 20 forest user groups representing 1,000 households (50 households per forest group) adopt community forestry, agro-forestry practices, and establish wood lots

   During the reporting period, nine forest user groups were formed together with Indawgyi Development and Conservation Association to establish community forestry and agroforestry in the designated buffer zone of the biosphere reserve. Total of 539 households are members of the nine FUGs. The groups will establish nurseries to produce seedlings: each FUG will produce 10,000 seedlings in June/July 2019. More FUGs will be established in 2019 to reach the target before the end of 2020.

5. By December 2020, at least 1,000 people (200 households/ approx. 50% of all households in flood prone areas) benefit from improved sanitation systems in the flood prone areas with most severe eutrophication problems

   An initial assessment was conducted by Wetland Work and Inn Chit Thu to understand the sanitation systems for the households located on the lake shore. Seventy five households at three villages are in the flood prone zone and have been pre-selected to improve the sanitation system during first stage due their limited (flooded pit latrine during rainy season or non-existing sanitation system. The first 50 handy pod system will be set up before the coming rainy season together with Wetland Work, Inn Chit Thu and a local business operator. Assessment will be conducted again in 2019 to select the second priority households to improve their sanitation system.

6. At least 6 villages establish community-based waste management systems; 5,400 people (1,000 households) benefit from waste collection, recycling and safe disposal, by project end

   During the reporting period, three villages were introduced to community-based waste management systems. Since December 2018 a waste collecting system is operated by Parami and village waste management groups in the three villages. The activity will be extended to additional villages in 2019 and 2020.

3.4 Monitoring of assumptions

Overall the assumptions made are still valid;

- Myanmar government continues to support multi-stakeholder engagement in protected area management.
- The security situation in Indawgyi remains safe. There has been no conflict around the project area during the reporting period.
- Myanmar government continues to support the issuance of community forestry licences in buffer zones of protected areas. The new protected area and wildlife law approved in 2018 states that local community groups can apply for community forestry licences in buffer zone of protected area.

- The market demand for value-added organic/ gluten-free rice products (rice flour) continues to grow.
- Improvements in waste management and sanitation lead to a decrease in water-borne disease and infection.
- Major natural disasters do not take place within the project sites and period that undermine the access to or availability of forest and forest products.
- Monsoon and overgrowth removes unused illegal logging roads during the project period, as is usual.
- The domestic and international markets for organic rice and gluten free products continues to grow during the project period
- The ability of Myanmar to export to international markets does not alter significantly during the project period.
- SMM remain financially stable and committed to developing the Indawgyi supply chain. The project conducted several meeting with SMM for the collaboration of supply chain.
- If only organic agricultural inputs are in use then the chemical inputs and run off will proportionally reduce.
- Local communities willing to change behaviour in favour of improved sanitation and waste management. The initial assessment showed the household members which live on the lake shore are willing to improve the sanitation system.
- There are no significant lakeside developments in this project period that cause an additional source of untreated waste pollution to the lake. There is no development project on the lake site during the current government period.

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

- Fifty-nine farmers received the PGS organic certificate in March 2019 and Indawgyi organic rice has already been distributed in local and in Yangon markets.
- The member of patrol units for both forest and lake patrols have significantly improved their capacity to control illegal activities particularly the fishery department improved their skills for patrolling and law enforcement operations.
- People from three villages increased knowledge on waste management and are actively participating in the waste collection.
- Local authorities in Indawgyi area have approved the handy pod sanitation program, which will improve the water quality and make a contribution to improved health (reduced e-coli bacteria in nearshore lake water.
- More than 500 households became members of the forest user groups and they improved their knowledge on the forest protection.

4. Contribution to the Global Goals for Sustainable Development (SDGs)

At impact level, this project will support SDG 15 by protecting and sustainably managing forests and associated biodiversity through collaborative protected area management contributing to Targets 15.1, 15.2, 15.5, 15.7.
Additionally, through the approach and activities, this project will contribute to Target 1.1 by decreasing the number of people in living on less than $1.25 per day through the introduction of post-harvest processing and production of value-added organic rice products that secure premium prices and for which market demand is increasing. Target 1.4 will be address by securing legal access rights to forest and wetland resources through implementing newly designated buffer zones.
The project will contribute to Target 2.4, by implementing resilient agricultural practices – organic rice and dry-seasons crops - that maintain ecosystem services, and that mitigate an emerging

threat to land and water quality, namely chemical agricultural inputs. Women will be actively involved in management and this project will ensure women take meaningful decision making roles, thereby contributing to Target 5.5.
Promoting organic agriculture will mitigate the use of chemicals, thereby safeguarding and improving water quality, contributing to Target 6.3. Addressing water and sanitation needs around the lakeside, will also contribute to Targets 6.2, 6.6 and 6b.
The project has contributed to sustainable production by promoting organic inputs and achieving organic certification, thereby positioning natural resources explicitly as the economic asset on which this economic activity depends. This decouples economic growth from environmental degradation, directly contributing to Target 8.4.

During the reporting period, the project contributed to Target 8.4 because of the project's support to farmers to achieve organic certification.

5. Project support to the Conventions, Treaties or Agreements

Project supported 101 rice farmers to establish sustainable rice cultivation in the Indawgyi area to reduce the impact to the lake.

Sustainable rice cultivation is a particular area of focus for the CBD in Myanmar, recognizing the threats and opportunities posed by the industry. Target 7.1 is that 'By 2020, SRI and other forms of environmentally friendly rice production have been implemented in 10% of rice paddy area'. This project, through output 3, directly addresses this target and both supporting actions.

The NBSAP aims for improved management of protected areas. The project contributed to improved collaborative management of Indawgyi biosphere reserve, including collaborative patrolling and law enforcement.

6. Project support to poverty alleviation

The project is supporting poverty alleviation by improving the rice cultivation system from non-orgnic agriculutre to organic agriculture to increase income from their products. The project also supported the market development for their product to link with the premium market for their qualtiy products. Indawgyi brand was introduced in the National market for not only rice but also other cash crops and agricuture products of Indawgyi. The beneficiaries will be the farmers in the project area.

During the reporting period, the project supproted INFA to distribute and market organic rice in the Indawgyi region and Yangon markets for a small premium price, while reducing the imput costs for rice production, contributing to poverty alliviation.

7. Project support to gender equality issues

Both women and men are key stakeholders in all aspects of the project. Men and women had equal opportunities to participate in trainings and meetings. The project also encouraged women to become members of the community forestry and farmer groups. In the newly formed forest user groups, 15% of total members are women.

8. Monitoring and evaluation

The project was monitored and evaluated based on the project work plan and the agreed measurable indicators (Annex 1 and 2). There have been no changes to the M&E plan during the reporting period.

9. Lessons learnt

The significant achievement of the project for this reporting period is that 59 farmers received Myanmar PGS organic certification for their rice and secondary crops (soya beans/ peanuts). The output was welcomed and recognized by the Kachin state government.

Although there were only two pilot sanitation system (handy pod) set up at the first pilot village, the local authority were pleased to approve the handy pod household sanitation system.

The farmers have increased capacity for post harvesting processing (rice drying and milling) to produce a quality product for the export market. INFA also had initial difficulties in the distribution of the rice due limited capacity for marketing. Therefore the project worked with a short term consultant to develop a marketing plan and assisted to link INFA with potential buyers in Yangon.

10. Actions taken in response to previous reviews (if applicable)

N/A

11. Other comments on progress not covered elsewhere

In the initial project proposal, to improve post-harvest processing the procurement of a rice flour mill was suggested. However during the project inception reducing moisture content and improving the quality of milling emerged as the key factors for improving quality and access to markets. The project now plans to utilize the rice post-harvest facility/ mill budget line to develop a mill, storage and drying facilities for the post-harvest processing of rice.

12. Sustainability and legacy

Sustainability has been built from the first year into the project approach through our focus on capacity building for local partners and by supporting local communities with the implementation of sustainable evelopment interventions.

All project activities with communities, partners and government stakeholders convey that the activities are supported by the Darwin Initiative, including publications, training materials and workshops resources featuring the Darwin Initiative logo,

13. Project expenditure

The financial part of the report will be submitted subsequently, once FFI and Darwin clarified the reporting period and any necessary budget amendments. FFI is in dialogue with Eilidh Young in this regard.

Table 1: Project expenditure during the reporting period (1 April 2018 – 31 March 2019)

Project spend (indicative) since last annual report	2018/19 Grant (£)	2018/19 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Monitoring & Evaluation (M&E)				
Others (see below)				
TOTAL				

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2018-2019

Project summary	Measurable Indicators	Progress and Achievements April 2018 - March 2019	Actions required/planned for next period
Impact The collaborative management and ecosystem services approach achieves effective biodiversity conservation and improved livelihoods in Indawgyi. Lessons learned are shared in Myanmar and through the global network of Biosphere Reserves.			[redacted]
Outcome *Participatory management systems, sustainable natural resource use and improved sanitation bring biodiversity benefits to the Indawgyi Lake Biosphere Reserve and livelihoods and health benefits to more than 10,000 residents.*	1. By the end of 2019, a collaborative management committee for Indawgyi Lake Biosphere Reserve will be established and operating 2. Number of resident water-birds is stable or increasing throughout the project period (including increasing number of Sarus cranes, VU, feeding in the paddy fields as an indicator species) 3. At least 200 farming households (c.1,000 people, 50:50 male/ female) adopt organic farming practices near lakeshore areas with eutrophication problems, by the end of the project 4. By December 2020, at least 20 forest user groups representing 1,000 households (50 households per forest group) adopt community forestry, agro-forestry practices, and establish wood lots 5. By December 2020, at least 1,000 people (200 households/	1. The first district level meeting has been organized in 2018 with the management committee and community representatives. The park warden of Indawgyi biosphere reserve who is a secretary of the township level management has chaired subsequent committee meetings, in particular on law enforcement. 2. The mid-winter count and monthly counts were conducted by ornithologists from the Indawgyi wildlife sanctuary, FFI and Inn Chit Thu for monitoring the water bird population in the lake and surrounding area. Based on the present count, the water bird population of the resident species is stable 3. In 2018, 106 farmers from 11 villages followed the organic farming practice (Participatory Grantee System (PGS)) for their rice farming and second crops: peanut and soy bean in over 800 acres. INFA will	

	approx. 50% of all households in flood prone areas) benefit from improved sanitation systems in the flood prone areas with most severe eutrophication problems 6. At least 6 villages establish community-based waste management systems; 5,400 people (1,000 households) benefit from waste collection, recycling and safe disposal, by project end	organize more farmers to join the PGS farming practice in 2019. To monitor the effect of eutrophication to the lake, Wetland Work conducted an initial assessment in December 2018 by Drone mapping of algae growth. 4. During the reporting period, 9 new forest user groups were formed in collaboration with the Indawgyi Development and Conservation Association to establish community forestry and agroforestry in the designated buffer zone of the biosphere reserve. Total of 539 households are members of the nine FUGs. The groups will establish nursery to produce seedlings: each FUG will produce 10,000 seedlings in June/July 2019. More FUG will be established in 2019 to reach the target number before end of 2020. 5. Initial assessment was already conducted by Wetland Work and Innchitthu to understand the sanitation systems for the households located on the lake shore. Seventy five households at three villages will receive improved sanitation systems during the first stage. The first 50 handy pod system will be set up before the coming rainy season together with Wetland Work, Innchitthu and local business operator.	

		Assessment will be conducted again in 2019 to document second priority households to improve the sanitation system. 6. During the reporting period, in three villages community-based waste management system were established.	
Output 1. **1. A decentralised and collaborative management committee and mainstreamed ecosystem services approach places the Indawgyi Lake Biosphere Reserve under management systems that respect integrated** **development and biodiversity needs**	*1.1 Collaborative multi-stakeholder Biosphere Reserve Management Committee operating by 2018* *1.2 The Biosphere Reserve Management Committee is trained in collaborative protected area management by February 2019 and starts implementing integrated conservation and sustainable development plans* *1.3 By end of the project improved law enforcement through collaborative patrolling; illegal commercial logging and firewood extraction, forest and wetland encroachment reduced by 50% against baseline.* *1.4 By December 2020, all BR stakeholder committee members exhibit improved environmental knowledge and attitudes against baseline knowledge, attitude and practice survey.*	1. First district level multi-stakeholder BR meeting was organized in July 2018. 2. No activity for this output. 3. Based on intensive training/ capacity building, regular successful, collaborative lake and forest patrols and law enforcement operations have been implemented. 4. No activity for this output.	
Activity 1.1 1.1 Facilitate regular meeting of the Biopshere Reserve Indawgyi management/ stakeholder committee (quarterly)		First district level management/ stakeholder committee was organized in July 2018.	The project is planning to organize township level meeting quarterly.
Activity 1.2, Facilitate regular meeting of the Indawgyi civil society network (bi-annual)		Two meetings were already conducted.	Quarterly meeting will be organized
Activity 1.3 Facilitate regular meetings of law enforcement agencies (forest department, Indawgyi wildlife sanctuary/ biosphere reserve management authority, fisheries department police.		Forest department, fishery department and police occasionally met to prepare law enforcement plan.	Project will plan to organise meeting quarterly.

Activity 1.4 Recruit and train local informant network		>10 informants provided information on forest crimes.	Continue working with those informants.
Activity 1.5 Recruit local community rangers		Five community rangers were recruited.	Continue working with them.
Activity 1.6 Establish two collaborative patrol units (5 pax each), including wildlife sanctuary rangers and community rangers for forest patrols		Forest department established two patrol units with community rangers.	
Activity 1.7 Establish collaborative lake patrol team (fisheries department, WS, community ranger)		Collaborative patrol was started in January 2019 by forest department, fishery department and community rangers.	Continue this activities.
Activity 1.8 Provide basic field equipment (GPS/ cameras/ field gear)		2 GPS, 2 cameras, 2 Spotlight to use at night time and 10 lifejackets were provided to the patrol team.	
Activity 1.9 Provide initial SMART patrolling training to collaborative patrol units, on the job training first 3 month		Theoretical and on-the-job training was conducted to train fisheries department officers and community rangers in collaborative SMART lake patrols.	
Activity 1.10 Provide SMART refresher training		SMART refresher training was organized for forest patrol unit to improve their skills.	
Activity 1.11 Monthly collaborative SMART patrols, operate informant network		Regular patrolling and law enforcement are conducted by the Indawgyi Wildlife Sanctuary (IDWS) supported by one community ranger for each patrol. Two forest patrols operated during the dry season months and one patrol team operated throughout the rainy season.	
Activity 1.12 Annual UAV monitoring of encroachment and illegal logging areas		FFI GIS team conducted UAV monitoring between 24 and 31 March 2018 along the Indaw river to record the land cover changed along the river.	UAV monitoring will conducted again in early 2020.
Output 2. Community forestry and agroforestry in designated buffer zones of Lake Indawgyi Biosphere Reserve reduce deforestation and forest degradation, while maintaining access to essential natural resources	2.1. At least 20 community forestry user groups established representing >1,000 households (c. 5,400 people, app. 50 households per group) by December 2018	(Report against the indicators on progress towards achieving the Output) 1. Nine groups were established with 549 members. 2. No activity in this year 3. No activity in this year 4. No activity in this year	

	2.2. At least 20 community forestry management plans established by December 2019 2.3. At least 20 wood lots established by December 2020 2.4. At least 20 community forestry licences issued by the end of the project 2.5. At least 50% of forest user group members utilise fire-wood saving or electric stoves. 2.6. The number of observable illegal logging roads in the project areas is reduced by at least 50% from project baseline to project end (post-monsoon)	5. No activity in this year	
Activity 2.1. Establish forest user groups		Nine groups with 549 members were established.	11 more groups will be established in 2019 and 2020.
Activity 2.2 Train forest user groups in forest inventory and forest management planning		No activity	
Activity 2.3 Forest inventory and forest management planning		No activity	
Activity 2.4 Train FUGs in tree nursery development		Training was organized in May for the nursery establishment for new 9 groups	
Activity 2.5 Establish and male nurseries operational		Nine forest user groups established the nursery.	
Activity 2.6 Train FUGs in reforestation/ agroforestry techniques		No activity	
Activity 2.7 Establish woodlots and agroforests		No activity	
Activity 2.8 Facilitate community forestry certification?		No activity	
Output 3. 3. Organic rice farming and value-adding practices result in certified organic products that provide income to at least 200 households and protect wetland biodiversity	*3.1 By May 2019, farmers representing 200 households, are trained in organic farming rules and concept of group certification* *3.2 INFA operated rice mill/ rice flour mill established and processing brown rice/rice flour by December 2019* *3.3 By December 2019, at least 200 households (c.1,000 people) in the*	1. 106 farmers were training during this year for the organic farming rules and concept of group certification. The 58 farmers received PGS organic certificate in March 2019. 2. N/A 3. 106 farmers followed the organic agriculture rules.	

	Indawgyi Lake Biosphere Reserve are using only organic agricultural inputs and zero chemical fertilisers and chemicals *3.4 By December 2020, at least 70% of target farmers have achieved organic certification by national and/or international standards* *3.5 Household expenditure on non-organic agricultural inputs per unit yield has decreased from project baseline to endline* *3.6 Households are achieving a higher net profit per unit yield as a result of value-adding activities between project start and end (expected profits and income increases to be confirmed during business case development in Yr1)* *3.7 Number of resident water-birds is stable or increasing (including the number of Sarus cranes feeding in the paddy fields indicator species for water quality/ absence of chemical contamination)*	4. March 2019, 58 farmers received PGS organic certificates for xxx acres. 6. N/A 7. Project conducted mid-winter count and monthly count for waterbirds.	
3.1 Undertake participatory consultation with farmers to establish their knowledge and priority learning needs (knowledge baseline)		Conducted with the PGS farmers during the training and monitoring trip.	
3.2 Develop training resources that are targeted to the farmer learning needs identified in 3.1, and pilot		Project worked with Myanmar Organic Grower and Producer Association for the PGS system.	
3.3 Roll out amended training modules and offer refresher training		Dr. Than Than Sein from Myanmar Organic and Producer Association provided the training to the Internal control system and organic compose making.	
3.4 Review the governance structure and capacities of the INFA and identify priority development needs to enable scale-up, pending the anticipated new membership numbers		The review the governance structure and capacities of the INFA was conducted by Christina Archer in	

	December 2018. The focus groups discussion was done with both INFA management committee members, and members to learn their structure and capacities. Christina stated “INFA members did not raise any immediate concerns, and showed good levels of understanding by members on the purpose, structure and governance of the group.” However she suggested some action points to follow up.	
3.5 In consultation with INFA and the organic certifier, agree timeline and responsibilities for the certification process	Before the project was begun, the INFA members have already agreed to establish the certification process with the support of Myanmar Organic grower and Producer association (MOGPA). PGS organic certificate granted by MOGPA can be applied by practicing internal control system. The internal control system will apply during the whole process of rice cultivation such as seed selection, preparing seed bed, transplanting, harvesting, drying and storage.	
3.6 Train internal auditors	Project introduced participatory grantee system (PGS) for the farmers in Indawgyi to apply organic certificate. PGS farmers were formed groups with of 5 to 10 farmers in each group to conduct internal control system for their chemical free agriculture practice. The farmers groups were trained to do internal control within their groups by Dr. Than Than Sein and team in June, July and August 2018.	
3.7 Revise and update the INFA governance structures and financial control mechanisms	Based on the assessment of Christina Archer, there is no need to revise the INFA governance structures. However the project supported the improvement of the financial management system by	

	providing basic book keeping training and appointing two staffs.	
I		
3.8 Establish supply chain control points for rice and rice flour	Two different supply chains were established after the harvesting period: distribution in the regional market and distribution in the Yangon market. With the support of the project, INFA members milled the rice and distribution the organic rice within Indawgyi area while Ivana, a market development consultant carried out national level market assessment in Yangon and Mandalay. Wolf's kitchen from Yangon purchased Black sticky rice from Indawgyi. For the international market, Sun Land and Ecoma are interested in exporting rice.	
3.9 Set up and prepare for physical installation of flour mill	No activity this year.	
3.10 Procure flour mill	No activity this year.	
3.11 Deliver training on flour mill use and maintenance	No activity this year.	
3.12 Develop and agree with INFA and Shan Maw Myae the detailed 3 year business plan	No activity this year.	
3.14 According to the business plan, identify the priority investments/ infrastructure/ capacities required and support INFA and Shan Maw Myae to address these	No activity this year.	
3.15 According to business plan, establish local sales distribution systems for rice and rice flour	Two different supply chains were established after the harvesting period: distribution in the regional market and distribution in Yangon market. With the support of the project, INFA members milled the rice and distribution the organic rice within Indawgyi area while Ivana, a market development consultant carried out national level market assessment in Yangon and Mandalay. Wolf's kitchen from Yangon	

		was interested in Black sticky rice from Indawgyi and ordered several kilogram their shop. For the internal market, Sun Land and Ecomas are interested in exporting rice. The first ordered from them will be before the next year harvesting time if they are able to find buyers for the Indawgyi rice.	
3.16 Support INFA to produce and sell rice and rice flour		The project support small grant to INFA to establish rice business after the harvesting time. Total of 1200 rice baskets (about 12 tons) were bought and sold in the local market.	
3.17 Base and end line surveys on household incomes and expenditures related to farming		No activity this year..	
4. At least 1,000 households (c. 5,400 people) participate in community waste collection and safe disposal; at least 200 households (c.1,000 people/ approx. 50% of all HH in flood prone areas) benefit from improved sanitation systems in flood prone areas with eutrophication problems	4.1 By end of 2020, at least 200 new treatment systems are in place located in flood prone areas with severe eutrophication 4.2 Reduced pathogens (E-coli) and reduced littoral BOD during the flood season in near shore water in 2021 compared to base line data collected in 2018 and 2019 (wet and dry seasons) 4.3 By end of project, at least 1000 households in Lake Indawgyi area are participating in waste collection; land fill sites established in 3 villages where dumping of waste in the lake is most severe, paid for by users	1.the project already selected 75 households at three villages to set up handy pod. 2. Conducted assessment for algae status on the lake shore in Dec 2018.	
4.1 Develop a core team between Inn Chit Thu and Wetlands Work. Develop a HandyPod training programme for construction training and sanitation marketing using informational materials, presentations, workshops, field work, and demonstration sites		In November and December 2018, the project team discussed with a local business operator for the sanitation project and organized training for the handy pod construction at two households in Lonton villages.	
4.2 ID and train local business operators from the target villages who serve the HandyPod's supply side elements		Three villages (LonTon, Hepa and Nawanpin) were selected for sanitation program development over the next 30 months. Each village has HHs (households) with pit latrines that families cannot use for at least 3 months	

	during high water season (see Category B, below). The survey by ICT found a total of at least 51 families had no latrine use during the flood season. In most cases, neighbor latrines are used during these months. This may cause inconvenience and some social friction, especially if users are not relatives as was mentioned by several families. Within the three target villages there are more than 122 flooded households; 23 of these have no sanitation (see Category A, below) and 51 are not usable during the 3 month flood season.	
4.3 Organise a Sanitation Raffle (lucky draw) for flood-prone households in each target village involving various leadership levels; promotion, prizes, events coordination	N/A	
4.4 Install winning HandyPods in dry season	N/A	
4.5 Provide faecal sludge management guidance and demonstrations	N/A	
4.6 Monitor and evaluate initial target village strategies; adapt as needed	N/A	
4.7 Explore and specifically define broader scale up of sanitation activities around Lake Indawgyi	N/A	
4.8 Establish baseline information: nearshore pathogens (E. coli) and algal mat density in Year I wet and dry season	Drone trial on Dec 15 2018 – Taber Hand and Thet Zaw Tun, drone pilot out to algal mat area – Nwaungpin – done but no algae. Lonton – done and found algae – Results look very doable in correct algae season with late afternoon sun angle and very calm water.	
4.9 Develop waste management awareness materials	Communications with local leaders and homeowners about the program, including 2 stages for flooded and non-flooded HH, and urine collection program: Met with 2 Lonton District Village Chiefs and an Administrator: meetings for awareness & approvals (FFI w/ Ngwe Lwin, Zaw Min Oo,	

	Thazin Saw, WW w/ Taber and ICT w/Zwe. Engaged local Business Operator in making 2 existing Handy Pods.	
4.10 Implement waste management awareness campaign	Two days long awareness campaign for the waste management were conducted at Nan Mon village together with local authorities, high school and villagers on 18 and 19 January 2019. On the first day, the presentations on the waste management were presented to three hundred students at the school and on the second day, about 250 students and villagers collected plastic waste around the villages. On 20 Feb 2019, the demonstration of the plastic burning by plastic burning cage was conducted at Nan Mon village to the public.	
4.11 Facilitate establishment of village-based waste management systems, identify supply chain for recycling materials	The project provided financial support to the Parami group to extend their activity to three more villages: Maing Naung, Sanwinkone/Innthar and He par. Since December 2018, the wasted truck collected the wastes at those three villages once a week.	
4.12 Establish village land fill sites for safe disposal of waste	Project supported Parami group to develop landfills in three additional villages	
4.13 Provide support to the new waste collection system	The project supported the establishment of a weekly waste collection system in 3 villages.	

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: The collaborative management and ecosystem services approach achieves effective biodiversity conservation and improved livelihoods in Indawgyi. Lessons learned are shared in Myanmar and through the global network of Biosphere Reserves.			

Outcome: Participatory management systems, sustainable natural resource use and improved sanitation bring biodiversity benefits to the Indawgyi Lake Biosphere Reserve and livelihoods and health benefits to more than 10,000 residents.	Note: All socio-economic indicators will be disaggregated by gender and wealth class in order to monitor the equity of project outcomes 0.1 By the end of 2019, a collaborative management committee for Indawgyi Lake Biosphere Reserve established and operating 0.2 Number of resident water-birds is stable or increasing throughout the project period (including increasing number of Sarus cranes, *VU,* feeding in the paddy fields as an indicator species) 0.3 At least 200 farming households (c.1,000 people, 50:50 male/ female) adopt organic farming practices near lakeshore areas with eutrophication problems, by the end of the project 0.4 By December 2020, at least 20 forest user groups representing 1,000 households (50 households per forest group) adopt community forestry, agro-forestry practices, establish wood lots and reduce the consumption of firewood 0.5 By December 2020, at least 1,000 people (200 households/ approx. 50% of all households in flood prone areas) benefit from improved sanitation systems in the flood prone areas with most severe eutrophication problems 0.6 At least 6 villages establish community-based waste management systems; 5,400 people (1,000 households) benefit from waste collection, recycling and safe disposal, by project end	0.1 Government decision on management committee and minutes of committee meetings 0.2 Annual mid-winter bird water census 0.3 Organic farming certificates, internal annual audit and inspection reports 0.4 Community forestry management plans, CF certificates, annual forest user group reports 0.5 Annual sanitation assessment to verify numbers of HH adopting improved sanitation. 0.6 Annual waste management assessment of the adoption of community-based waste management systems and number of households that join waste collection system	Myanmar government continues to support multi-stakeholder engagement in protected area management The security situation in Indawgyi remains safe Myanmar government continues to support the issuance of community forestry licences in buffer zones of protected areas The market demand for value-added organic/ gluten-free rice products (rice flour) continues to grow Improvements in waste management and sanitation lead to a decrease in water-borne disease and infection

Outputs 1. A decentralised and collaborative management committee and mainstreamed ecosystem services approach places the Indawgyi Lake Biosphere Reserve under management systems that respect integrated development and biodiversity needs	1.1 Collaborative multi-stakeholder Biosphere Reserve Management Committee operating by 2018 1.2 The Biosphere Reserve Management Committee is trained in collaborative protected area management by February 2019 and starts implementing integrated conservation and sustainable development plans 1.3 By end of the project improved law enforcement through collaborative patrolling; illegal commercial logging and firewood extraction, forest and wetland encroachment reduced by 50% against baseline. 1.4 By December 2020, all BR stakeholder committee members and at least 70% of all beneficiaries exhibit improved environmental knowledge, attitude and behavior against baseline KAB survey.	1.1 Minutes of meetings 1.2 Training reports/ participant evaluation; annual Biosphere Reserve progress reports for the of implementation of the 5 year management plan 1.3 Monthly SMART patrol reports, drone-based threat assessment at the beginning and end of the project. 1.4 Minutes of meetings of BR stakeholder committee; Knowledge/Attitude and Behaviour surveys pre and post project interventions.	Myanmar government continues to support multi-stakeholder engagement in protected area management

2. Community forestry and agroforestry in designated buffer zones of Indawgyi Lake Biosphere Reserve reduce deforestation and forest degradation, while maintaining access to essential natural resources	2.1. At least 20 community forestry user groups established representing >1,000 households (c. 5,400 people, app. 50 households per group) by December 2018 2.2. At least 20 community forestry management plans established by December 2019 2.3. At least 20 wood lots established by December 2020 2.3. At least 20 community forestry licences issued by the end of the project 2.6. At least 70% of forest user group members utilise fire-wood saving or electric stoves. 2.7. Reduction of illegal logging roads by at least 50% 2.8 Pilot timber harvesting in 6 year old established CF based on VPA timber legality standards	2.1. Training reports (participant evaluation, monitoring & evaluation reports 2.2. Group formation reported to forest department 2.3.Community forestry management plans 2.4. Annual reports on Community forestry implementation 2.5. Community forestry certificates. 2.6. Firewood household survey before and post interventions. 2.7. UAV survey at the beginning and end of the project 2.8 Forest department licence for first legal CF timber harvest in existing CF	Myanmar government continues to support the issuance of community forestry licences in buffer zones of protected areas Major natural disasters do not take place within the project sites and period that undermine the access to or availability of forest and forest products. Forest Department issues licence for pilot CF timber harvesting based on VPA standards

3. Organic rice farming and value-adding practices result in certified organic products that provide income to at least 200 households and protect wetland biodiversity	3.1 By May 2019, farmers representing 200 households, are trained in organic farming rules and concept of group certification 3.2 INFA operated rice mill/ rice flour mill established and processing brown rice/ rice flour by December 2019 3.3 By December 2019, at least 200 households (c.1,000 people) in the Indawgyi Lake Biosphere Reserve are using only organic agricultural inputs and zero chemical fertilisers and chemicals 3.4 By December 2020, at least 70% of target farmers have achieved organic certification by national and/or international standards 3.5 Household expenditure on non-organic agricultural inputs per unit yield has decreased from project baseline to endline 3.6 Households are achieving a higher net profit per unit yield as a result of value-adding activities between project start and end (expected profits and income increases to be confirmed during business case development in Yr1) 3.7 Number of resident water-birds is stable or increasing (including the number of Sarus cranes feeding in the paddy fields – indicator species for water quality/ absence of chemical contamination)	3.1 Training reports 3.2 Rice mill/ rice flour mill (INFA equipment register) records showing volumes processed 3.3 Stock control, invoices and financial records showing volumes sold; prices and income to INFA by household. 3.4 Organic certification 3.5 Receipts showing expenditure for farm inputs 3.6 Receipts showing purchase of rice & rice flour/income for INFA members 3.7 Annual mid-winter water bird census	The domestic and international markets for organic rice and gluten free products continues to grow during the project period The ability of Myanmar to export to international markets does not alter significantly during the project period SMM remain financially stable and committed to developing the Indawgyi supply chain If only organic agricultural inputs are in use then the chemical inputs and run off will proportionally reduce.

4. At least 1,000 households (c. 5,400 people) participate in community waste collection and safe disposal; at least 200 households (c.1,000 people/ approx. 50% of all HH in flood prone areas) benefit from improved sanitation systems in flood prone areas with eutrophication problems	4.1 By end of 2020, at least 200 new treatment systems are in place located in flood prone areas with severe eutrophication 4.2 Reduced pathogens (E-coli) and reduced littoral BOD during the flood season in nearshore water in 2021 compared to base line data collected in 2018 and 2019 (wet and dry seasons) 4.3 By end of project, at least 1000 households in Lake Indawgyi area are participating in waste collection; land fill sites established in 3 villages where dumping of waste in the lake is most severe, paid for by users	4.3 Photo evidence of treatment systems 4.1 Repeat pathogen survey report showing reduced level of pathogens (E-coli) 4.3. Village waste collection agreements; photo documentation of land fill sites	Local communities willing to change behaviour in favour of improved sanitation and waste management There are no significant lakeside developments in this project period that cause an additional source of untreated waste pollution to the lake.

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
6A.	No. of farmers received Internal control system training for organic certificate application and compose making			80				
6A.	Number of people to receive SMART Patrol training			17				
6A	Number of people to receive Community Forestry training			30				
6A	Number of people receive sanitaion training			6				
14B	Number of person attend workshop to present law enforcement			0				
7	Number of information leaflets or posters on the Community foresty and organic rice project			100				
7	Number of information lealfets or poster on saniation.			100				

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	Yes
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	Yes
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Not yet/ clarification needed with Darwin
Do not include claim forms or other communications with this report.	