Ecotourism Development in Lampi Marine National Park, Myanmar

EXECUTIVE SUMMARY

In this executive summary, the three reports that follow are briefly introduced. The reports are interrelated and aim to provide strategic guidance for the development of a number of ecotourism activities in Lampi Marine National Park in Myanmar. **Report One** articulates key suggestions on product development and design. **Report Two** presents the Ecotourism Carrying Capacity of the ecotourism activities. **Report Three**, drawing upon the first two reports, formulates the PES Scheme (Payment for Ecosystem Services). The reports are the result of a field investigation in Lampi Marine National Park in January 2020. During the field work, inspections of each ecotourism site were accomplished with the following objectives in mind:

I. Examine key physical features of the ecotourism sites;
II. Examine key characteristics of the ecotourism activities.

At the macro level, the field investigation allowed a clear understanding of the region, tourism development issues, tourism market and access, and current and expected community-based groups (CBT). It was essential the support of the staff *in loco*, who have provided essential information that helped build the reports. Moreover, secondary data, provided by the organisation, was used for the carrying capacity. Following, an overview of the key points, aims and objectives of each report is provided.

Report 1. Suggestions on Products and Packages Development

This report begins by briefly summarising the field mission to then provide technical suggestions on product design, market channels and potential design of tour packages. The latter range from half-day to five-days ecotourism experiences. From a more technical perspective, the report suggests a *process-framework* which aims at providing a step-by-step guidance to the development of the ecotourism activities. This framework introduces the key steps starting from the current development phase to capacity building and market access. A key element supported in the report is the *prioritisation process*, referring to the need of prioritising the development of certain ecotourism activities over others. Here, three levels of priority are suggested. Moreover, a small number of additional cultural tourism services were added in the view of facilitating a holistic ecotourism model. Traditional services, such as *lunch with family*, can promote – in addition to a key tourism activity – the involvement of women, who, in this context, are less likely of participating in many of the other ecotourism activities, especially semi-adventure ones.

In the report, the potential market channels are recommended – for a strategic approach, these channels are subdivided into *short* and *long term*. In the short term, it was identified that the key market channels are the main tour operators in Kawthaung, the resort/s located in and adjacent to the park, and the

passing-by-tourists with sailing boats. In the long term, tour operators in Ranong and Yangon should be approached in order to ensure a more stable market for the CBT. The need to prioritise the ecotourism products and market channels remains vital because of the need to facilitate economic benefits for the community/ies involved as soon as possible and ensure local motivation, trust and participation in the project. Furthermore, prioritisation means sooner access to the market with fewer ecotourism products, starting to build trust and collaboration with the tour operators. The table briefly summarises the recommendation on product prioritisation. Note: in *italic* the additional suggested ecotourism products.

Priority 1	Priority 2	Priority 3
Moken Experience (short 4 hours tour) - Makyone Galet Village Tour - Bo Cho Jungle Trail - Kayaking in the Tourist River	- Moken Experience (2 days tour) - Tourist River Walking Tour - Crocodile River Kayaking - Sitta Galet Jungle Trail - *Sitta Galet Village Tour with Lunch with Family* - Gregories Tour	- *Lunch at Kaw Pawth with Village Visit* - Waterfall Trail - *Lunch at Makyone Galet*

Report 2. Ecotourism Carrying Capacity

Report Two, of a more technical nature, articulates the Ecotourism Carrying Capacity for the park. This refers to the maximum number of visitors that can be tolerated in one specific site given the site's and activities' characteristics. The Carrying Capacity is the result of data collected through field inspections and secondary data on wildlife species, their vulnerability and distribution. It was also essential to consider as a variable the expected ecotourism-management capacity in order to have a more realistic value. The methodology adopted is advised by the IUCN. The table below briefly summarises the daily cap of visitors for each ecotourism product.

Daily Max Carrying Capacity	
Bo Cho Jungle Trail **(34)**	Tourist River Mangrove Walking **(30)**
Tourist River Kayaking **(20)**	Sitta Galet Jungle Trail (**37)**
Crocodile River Kayaking **(30)**	Waterfall Jungle Trail **(24)**
Gregories Tour **(30)**	Hornbill Sunset Watching **(24)**

Additionally, the report provides a support on how to use the Carrying Capacity in the case of tour packages. This is also enriched by a detailed guidance on the possible variations of the maximum number of visitors in relation to the number of CBT guides available for a specific ecotourism activity.

Report 3. PES (Payment for Ecosystems Structure)

The report aims to recommend the PES structure/scheme for the park based on the ecotourism activities in development. It starts by providing an overview of actors involved in the scheme and the suggested booking system. The latter is the engine of the PES scheme and, ultimately, of the CBT. The PES scheme considers the importance of *empowering* the CBT to facilitate its long-term financial and qualitative viability. In this report, a recommended Ecotourism Model is suggested. This was constructed as holistically as possible according to the information collected. The Ecotourism Model embeds the ecotourism products and the additional suggested activities, the development process as well as current and suggested recommended CBT groups. Moreover, the Ecotourism Model presents the key figure of the CBT coordinator, his/her role and responsibility, and the importance of this figure in the whole functioning aspect of the CBT.

The PES scheme was constructed for each ecotourism product providing estimated development and operational costs, market price (what is received by the CBT) and the benefit sharing structure for each product. This includes the service providers, contribution to CBT fund and park fund and depreciations.

An attached indicative table suggests, based on seasonal realistic estimation, the total seasonal income and profit of the ecotourism activities, contribution to the park and CBT fund/s and to service providers. Moreover, it was also essential to estimate the indirect contribution to the community/ies through other services, such as fuel, boat hire etc. in order to have a holistic vision of the beneficial potential of the ecotourism activities. Although the PES is based on estimates, as realistic as possible, the process of product development will inevitably provide new information to be integrated in the structure.

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REPORT ONE

Ecotourism Activities

in Lampi Marine National Park, Myanmar

Suggestions on CBT Products and Packages Development

Prepared for Oikos Myanmar by Angelo Sciacca (2020)

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INTRODUCTION

Following my visit to Lampi Marine National Park (LMNP) from January 18th to January 26th, in this report I articulate key suggestions on products and packages development. This is the first part of the *trilogy* of reports as a result of my field work with the Oikos Team at LMNP. In this report, I will briefly summarise the field mission and then I will provide suggestions of product design and development in order to discuss market channels and tour packages.

FIELD MISSION

I visited LMNP between the 18th and 26th of January. The field mission had the main aim of developing a carrying capacity (Report 2) and a PES (Report 3) for the ecotourism activities in the developing stage as part of the STAR project. During the time of my visit, I have gathered some key suggestions that I would like to share with Oikos Myanmar in this first report. I breakdown the field activities below:

19th January – Waterfall Trail in Easter Lampi / Hornbill Watching in proximity to the visitors' centre

20th January – Mangrove – Jungle Trail in Sitta Galet / Sitta Galet Village Tour

21st January – Crocodile River Kayaking

22nd January – Jungle Trail in Bo Cho Island / Meeting with Moken Group

23rd January – Water Cave / Cliff Bat Cave / Tour of Gregories with Snorkelling

24th January – Tourist River Kayaking / Tourist River Walking

25th January – Jungle Trail in Bo Cho Island / Makyone Galet Village Tour

During the visit to LMNP, I was mainly supported by Nanda and Serrano in the field and by all the other team members at the visitors' centre.

PRODUCT DESIGN

WATERFALL TRAIL

The waterfall trail is located in the eastern part of LMNP. The trail is 1.5 km-long and can be considered *difficult*. In fact, the trail is not suitable for the wider market for the following reasons:

1 – the trail is too long and challenging;

2 – the waterfall may not be so appealing to tourists as expected – it can also be fully dry (in fact, when we visited the waterfall was dry);

3 – the trail is too difficult, especially if safety issues are considered; it is easy to fall over the stones.

Although the trail offers a stunning walk through the jungle, it will be difficult to integrate this product within the wider ecotourism strategy of the park. This is also because the trail is located far from the visitors' centre and Bo Cho Island, and it is the only possible activity in the eastern part, considering the potential products identified by Oikos and the draft zoning.

While LMNP has a wide range of potential ecotourism products, I would suggest putting the waterfall trail in standby and evaluate its potential in the future for the market that you will attract. However, at this stage, it is more advisable to prioritise other experiences rather than this one.

The trail provides the opportunity to observe birds, to have close encounters with snakes and other fauna as well as to learn about the local flora. However, the main concern is if such experiences are worth the effort of doing this difficult trek. If, during the project, Oikos team and the CBT opt to take forward the waterfall trail, I suggest enriching the experience with soft birdwatching and training local guides to provide simple but engaging interpretation.

In situations where the trail surface is challenging, dangerous and slippery, a wooden pathway could be built. I advise a narrow, easy-to-build trail, such as the one in Cradle Mountain in Tasmania (left). This trail would help to minimise loss of side-vegetation, while making it more accessible for a wider number of people. Nevertheless, while a wooden trail minimises the environmental

impacts of visitors, it is more costly and requires maintenance over time. These are two crucial aspects within a CBT context, where, with time, it will be the community responsible for fixing or replacing the infrastructure. A CBT is about empowering – also financially – and being independent. However, this implies that any investment in product development should be made keeping in mind the fact that one day the community should be able to keep the product going. Another option would be to do a side trail only by trampling the soil. This option would facilitate the walk, but can lead to top-side vegetation loss, as the trail keeps widening. This method needs little maintenance and has no future costs for the CBT.

If the product is further developed, it will be essential to market the *walk* as the main experience, not putting too much emphasis on the waterfall, as it is not worth the effort – while the jungle and the birdwatching are. With this in mind, I suggest not calling the product "Waterfall Trail" as this would rise visitors' expectations to see a large waterfall. Instead, I advise naming the product "Jungle Trail", "Birdwatching Trail", "River Hike", or any other attractive name.

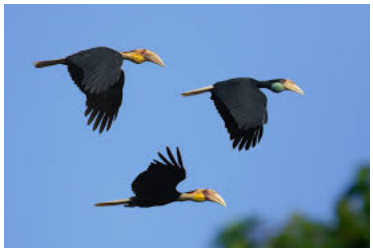
Safety is a major issue in this trail. Falling down is easy and a great number of snakes can be seen throughout the way. Although a suitable market for this product may be identified, these safety issues must be considered, despite the signing of the risk assessment. An accident on site would not contribute to building a positive image of the CBT. Therefore, safety actions must be implemented, for this product and all the other ones. For instance, local guides should be aware of how to act in case of snake bites.

The product barely fits into the Sustainable Use Zone of the recently drafted zoning plan. Any extension of activities should consider the potential trespassing of the zoning. In contrast to the management plan, which indicates that max. 15 people should be accompanied by 1 local guide in this product, the limit should be decreased to max. 7 to ensure that visitors experience the hike with a second regional guide in addition to a local guide. This is likely to be the case, as tour operators and local resorts will unlikely send their customers without the supervision of a regional/national guide. The total presence of 2 guides (1 local / 1 reg. or nat.) ensures a better safety backup during the activity. Taking out a visitor with a broken leg, for instance, requires at least two people.

On a scale from 1 to 3, where 1 is the first product to be developed within the ecotourism strategy, I suggest that the Waterfall Trail is 3, therefore the *least* priority

HORNIBILL WATCHING CLOSE TO THE VISITORS' CENTRE

Plain-Poached Hornbill is an endemic species of Southeast Asia. Its endemism signifies its market value within the broad ecotourism strategy of LMNP. The experience takes place in proximity to Bo Cho Island and the aim is to observe the Plain-Poached Hornbills returning to the roosting site. Therefore, the activity fully depends on the permanency of the particular species. The Management Plan suggests a min. 200 meters observation distance. However, if birds do not fly over the sea-channel between Lampi and Bo Cho to reach the roosting site in Bo Cho, but instead they arrive from the west/east/south of the roosting site, the observation should take place between 200 to 250 meters of distance. Over 250 meters, the overall experience decreases, because visitors want to be able to see the colours of the birds and take pictures. With high quality equipment, the observation distance can increase, but, similarly to the previous product, the future ability of the community to replace such equipment should be taken into consideration. For this reason, a sort of depreciation mechanism can be applied (see Report 3).



The experience has the potential to be promoted as "Hornbill Sunset Experience" or "Hornbill Monitoring Experience". The monitoring experience gives a greater opportunity to engage the visitors. By joining the park staff for their sunset monitoring, the tourists will be able to learn and feel involved – in addition, the data will be useful for the park staff. This is a sort of intersection between ecotourism and citizen science.

The experience can be carried out with the traditional long-tailed boat and enriched with some interpretation provided by the local guide and the park staff. This interpretation can be verbal and/or in the form of leaflets. Adding to the experience some soft pre-dinner snacks, such as traditional rice candies and/or tea, would not only please tourists and tour operators but also – and most importantly – create an extra economic stream. Given the fact that most people involved in the products of the ecotourism strategies, as for today, are men (about 15 against 2 women discovery leaders), the introduction of the snacks in the experience could bring money to the village's women (gender balance), who are usually in charge of food and drinks preparation. Apart from tea, other traditional drinks could be included in the experience, as well as cups made of bamboo or in traditional design. Finally, I suggest keeping the experience to about 45 minutes or max 1 hour, so the experience remains enjoyable, without the risk of becoming tedious.

Using local experts in birds that are currently working with Oikos in LMNP would be helpful to put together a simple handout with interesting information on the local birds. With this handout, the CBT guides can learn about the subject and maybe add local knowledge (e.g. legends and stories) to explain to tourists. The handout should be not a technical document, but tourist-attractive, engaging and visual (with use of

pictures, maps etc.). Ideally, this handout should include interpretation (what to tell to visitors), self-presentation, and risk and safety.

On a scale from 1 to 3, where 1 is the first product to be developed within the ecotourism strategy, I suggest that the Hornbill Watching is 2

MANGROVE AND JUNGLE VISIT IN SITTA GALET

This is definitely a high priority, despite market-related challenges. If a collaboration with the nearby resort (Wal.) is established, this area of LMNP can be promoted. However, without collaboration, it would be quite difficult to integrate the mangrove and jungle visit within the packages. In the future, when packages will last longer (2-3 days), the integration of Sitta Galet area will be easier without relying only on the nearby resort.

The experience encompasses walking through the mangrove and the jungle with potential observation of birds (soft birdwatching), which is attractive not only for bird experts but also general tourists. The walk, then, requires some explanation of the local fauna and flora and it should not last more than 1 hour. The trail is very long, up the mountain, and it is not the case of taking visitors all the way. It is better for the trek to be short and informative, rather than long, tiring and without time for explanation by the local guide.

The product will be difficult to manage by the group of Makyone Galet and, with time, it could also rise conflicts between the communities. In this scenario, trying to create a group in Sitta Galet is a possible solution, always having one guide available when needed.

Creating a group only for one CBT product, however, is unlikely to be attractive for the Village Head and the community. For this reason, I suggest trying to form a cluster of *ecotourism – cultural* products in Sitta Galet. This may be promoted as a tour package (half a day) and it can be offered to the nearby resort as a short soft experience, as described below:

- **Pick-up** in the morning from the resort and visit the mangrove and jungle for 45 min./max. 1 hour.

- **Snorkelling** in the nearby small islands to see the reefs. Snorkelling can also include creative/monitoring waterproof leaflets, "quiz-style", in which the snorkeller can identify, for example, the 10 most common species seen during the experience. Again, data can be useful in some cases.

- **Visit the nearby village of Sitta Galet**. Short tour of the village (identifying few points of interest) – I suggest avoiding the monk house where some macaques are chained. Instead, I advise trying to identify some traditional workshops that could be visited. A walking tour through the village, enriched with good and simple explanation, would be an interesting experience, plus the village itself is very attractive.

- **Finish the half-day tours with a traditional lunch**. For this experience, I see 3 options, listed below in order of priority:

1) Traditional lunch with local family – this option gives a more authentic experience and it is more interesting from a tour operator point of view. I advise identifying 2-3 families during the CBT meeting, assessing the suitability of the house, providing the necessary traditional equipment as well as training, testing and finalizing the product.

2) Local existing restaurants – in Sitta Galet there are two main businesses; one is inside the village and functions as a restaurant, thus it could provide lunch for the visitors. It can potentially create an economic stream and give support to existing business. The other business has a better view, over the sea and fishing boats. However, this business functions as a shop, not as a restaurant. Although it could be better from a tourism-perspective – because it is more attractive –, as it is not a restaurant, it could rise conflicts within the community over time. I would suggest, then, to involve both businesses, creating more economic stream and involvement.

3) All the above – both options above could be developed; it depends on the willingness and commitment of the community. In any case, lunch options should be given, along with explanation about the traditional cuisine to engage the tourists.

This cluster of products would involve the following service providers:

- Environmental local/village guide (as part of Sitta Galet Discovery Leaders)

- Cultural village guide (as part of Sitta Galet Discovery Leaders)
- Boat driver from the village/boat owner
- Food provider (e.g. family and/or existing restaurants)

As mentioned, this tour could have a great benefit for Sitta Galet. It all depends on the market, collaboration with the nearby resort and the future extension of packages to up to 2-3 or more days. In that case, in my opinion, this half-day experience in the Sitta Galet area has great tourism potential.

On a scale from 1 to 3, where 1 is the first product to be developed within the ecotourism strategy, I suggest that the Mangrove and Jungle Visit in Sitta Galet is 2

CROCODILE RIVER MANGROVE KAYAKING

According to the draft zoning plan, the Crocodile River is – for the most part – included in the core zoning. This means that the kayaking activities can only take place in the initial part of the river. This implies that no kayaking is allowed in the smaller channels of the river. The carrying capacity (Report 2) considers only the sustainable zone of the river where the activities can take place. This makes the experience different than in the Tourist River. Its location makes it possible to be included in the 2-days Moken Experience as a short stop.

Traditional or plastic kayaks can be used, but using traditional canoes might make the experience more memorable. Here, the knowledge of one of the local team members on mangroves can surely enrich the training for the local guide. One of the local staff has great knowledge, not only on species and their traditional uses for the communities living adjacent to the mangrove, but also on stories and legends, which are incredibly interesting when integrated in the tour.

At the moment, I see this product only as a part of the Moken Experience (2 days). For other packages, I would prioritise the Tourist River, which is far more penetrable and therefore interesting from an experience point of view.

During my visit to the Crocodile River I had the opportunity to have lunch at the village of Kaw Pawth, which is built on shells and it is quite picturesque. There is a small restaurant which could potentially be

used as a lunch stop, or perhaps a lunch with a family. Although not a priority, I would consider this option as the project develops.

On a scale from 1 to 3, where 1 is the first product to be developed within the ecotourism strategy, I suggest that the Crocodile River Tour is 2

JUNGLE TRAIL IN BO CHO ISLAND

I visited the trail in two occasions. During the second occasion, we found the way to the first beach in the west side of Bo Cho Island. There are two options in this trail: one that goes to the first beach and one to a beach further away. I suggest that the first is the most ideal one to work on. This is about 1 to 1 ½ hour walking for a regular tourist who would take time to stop, take pictures and listen to the guide. A longer trail would not be viable. The Bo Cho Jungle Trail is very interesting because it allows viewing different landscapes, such as mangroves, rubber plantation, jungle and, by the end, a beautiful sandy beach. On this note, a return-hike would be too tiring and repetitive. As there is not a loop-trail, an idea could be to pick-up the visitors by boat from the beach.

During the trail, the guide can explain about the mangrove and the rubber plantation. There is a small rubber workshop which could be included in the tour, perhaps involving the workshop owner, with a short demonstration to the visitors, creating a mixed natural/cultural experience. A reasonable payment can be made to the workshop for the demonstration (e.g. treating the workshop owner as a service provider) or the payment could be in the form of donation. However, I would suggest the first option, a fixed payment made for each visit to the workshop owner.

There is also some betel nut small plantation that could be included in the interpretation during the walk. Moreover, putting some direction signs on the way – although the tour will take place only with the guide – helps to keep the walk always in a designated trail, avoiding the creation of informal trails.

Lastly, the entrance of the trail is dirty, with glass dispersed all over the area. This is neither safe nor visually attractive, so the space should always be kept clean.

On a scale from 1 to 3, where 1 is the first product to be developed within the ecotourism strategy, I suggest that the Bo Cho Island Jungle Trail is 1, therefore the *high* priority

WATER CAVE / CLIFF BAT CAVE

During my visit to LMNP, the location of potential tourism products was investigated to ensure that these do not take place in the Core Zone. The Water Cave is definitely a key attraction in the area, with kayaking and snorkelling opportunities. However, according to the recent drafted zoning strategy and after visiting the area, it was confirmed that the Water Cave is located in the Core Zone of LMNP.

During this inspection, we visited a second cave that was identified by the Oikos Team as a site of potential tourism interest. Yet, it was confirmed that this site is also included in the recent designated Core Zone; therefore it is off-limits to ecotourism activities.

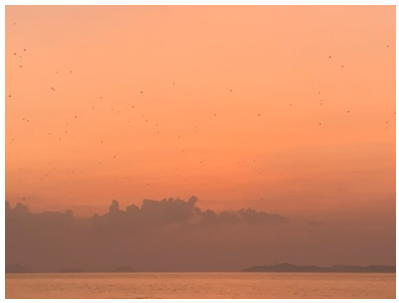
TOUR OF GREGORIES WITH SNORKELLING

The aim of the tour is to reach the South Island of the Gregories and provide the opportunity for visitors to snorkel. The portion of the South Island (southwest of the south Gregory Island) is in the Sustainable Use Zone, which means that the activities can only take place in this area of the Gregories. The tour could be developed as follows:

1) Navigate from Bo Cho towards the Gregories – here most of the islands are designated as Core Zones, but, by respecting the speed limits reported in the draft Management Plan, the boat driver can give the chance for visitors to take pictures of the various islands (non-stop/non-anchoring island hopping).

2) Reach the south island for snorkelling. Here, snorkelling can be very interesting (for instance I saw a green turtle), as there is a coral reef that makes the underwater attractive for snorkellers.

Note of sustainability: I suggest installing a number of buoys in the Sustainable Use Zone, designed for snorkelling. The boat would not anchor, but only attach to the buoy. To limit the pressure of snorkellers on the reef (in, potentially, everyday activities), 5 tracts can be installed of about 100 x 50 meters. Snorkelling activities would move from one tract to another. This means that one tract would only be visited every 5 days, limiting the pressures on the reef (carrying capacity – Report 2 – will be calculated using the tract system).



3) End the experience with flying foxes watching, when visitors can see hundreds and perhaps more than a thousand flying foxes. The south island is also unique for sunset.

It is important to leave Bo Cho in the early afternoon in order to have enough time for the activities. Finally, in the interpretation training for the local guide, I would also include information about seagrasses and their importance to local ecosystems.

This is definitely a high priority in the ecotourism offer

TOURIST RIVER KAYAKING / TOURIST RIVER WALKING

This is another highlight of LMNP. According to the tide, the river can be visited in two ways: by kayak or on foot. I advise keeping both options. As the Sustainable Use Zone in the Tourist River is larger than in the Crocodile River, kayaking is also allowed in small mangrove channels, which creates a completely different experience than the one in the Crocodile River. Moreover, being closer to Bo Cho, the Tourist River is much more accessible marketwise. This is a priority product in the ecotourism strategy of LMNP.

The walking tour would take place in the beginning of the channel, where some small paths can be visited. Here, there are many stories and tradition-related information that can be shared with visitors. One of Oikos' local staff has very good knowledge on mangroves, local customs and stories. He could potentially help build the interpretation of the walking tour and train the local guides.

I suggest not more than one 1 hour for each experience.

This is a high priority for the ecotourism strategy

MAKYONE GALET VILLAGE TOUR

The village tour is very interesting, with the Moken quarter of the village being its highlight. Here, the guide can explain about the Moken culture (e.g. traditional houses, fishing etc.). I suggest the tours to last not more than 1 hour and to avoid visiting the school. In my opinion, the school should not be a tourism attraction and the tour would disturb school activities. Moreover, I would ask the visitors if they want to visit the monastery, leaving this optional.

A suggestion would be to investigate if there are other points of interest in the village, such as traditional workshops (e.g. fishing net production, snacks production). Otherwise, the walk through the Moken area and the village centre is good enough if accompanied by interesting information. For this, the local guide should share interesting aspects of the village and culture. In Makyone, I advise integrating a food-based product. This could be a lunch-with-family where people get to experience traditional Moken or Burmese food.

SUGGESTED PRIORITY PRODUCTS

It is important to share with the communities only what it is surely feasible, so to not rise their expectations, that will be difficult to meet. For instance, sometimes it can take longer than expected to develop the products – which is why they are classified in 3 priority levels.

In the table below are all the products identified by Oikos that I have tested, plus 3 suggestions on food-based activities as part of the ecotourism model. However, as can be seen, the number of products is very high in proportion to the current community participation.

I suggest that the priority products are:

Priority 1	***Priority 2***	***Priority 3***
- Moken Experience (short 4 hours) - Makyone Galet Village Tour - Bo Cho Jungle Trail - Kayaking in the Tourist River	- Moken Experience (2 days) - Walking Tour in the Tourist River - Kayaking in the Crocodile River - Sitta Galet Jungle Trail - Sitta Galet Village Tour with Lunch with Family - Gregories Tour	- Lunch at Kaw Pawth with Village Visit - Waterfall Trail - Lunch at Makyone Galet

Priority 1 products are the ones that can be run by the current Moken group and the Bo Cho Discovery Leaders. Priority 2 are mostly products that may need some extra time to develop and the potential products in Sitta Galet area. Priority 3 products are less of a priority, but can be considered in the future.

The products classified as Priority 1 have an easier market access as they are located close to the visitors' centre. The 4-hours Moken experience has a quick market access through a collaboration with the nearby resort in Wale Island. By prioritising the products, it is possible to accelerate the economic benefits for the community and, therefore, bring higher motivation and involvement in the development of the Priority 2 products. This will also help build trust as the community starts to have tangible benefits. It is advisable to start with smaller and easier products to then try to expand, without being overwhelmed with challenges.

PRODUCT DEVELOPMENT WITH THE CBT

As the products are in their early stage, I suggest the following steps to be followed in order to product priority.

1) Finalise the ecotourism products
2) Ensure enough community involvement needed
3) Share with tour operators / feedback on ideas / integrate the feedback
4) Integrate feedback from tour operators / develop products (e.g. equipment and infrastructure?)
5) Train the involved members of the community
6) Run internal testing with Oikos Team and "fake" tourists / feedback and improvements
7) Run external testing with real tourists / feedback and improvements
8) Invite tours operators for familiarisation trip / feedback and improvement
9) Ready for market

1) *Finalise the product* – it is important to have a clear idea of the product at this stage. For example, the exact trail path, the activities of the Moken Experience etc. However, most of the products are already defined.

2) *Ensuring enough community involvement* – each product should have enough involvement from community members that are trained for the specific products. At least 3-4 people for each product should be trained, for instance at least 4 discovery leaders for the village tour – this ensures availability when tour operators send tourists, or when there are two or more groups visiting, and it ensures wider benefits.

3) *Share with tour operators the product ideas* – this is important to create a link with the TOs and get initial feedback from them. For instance, they may say that they have no interest at all on specific products, but are highly interested in others. The product development should adapt to the market. As we know, TOs

know their market better than us. This is a good stage to establish potential collaboration with them and see which are interested. If it is not possible to meet the local TOs Association during collective meetings, it is important to meet face-to-face the key TOs based in Kawthaung, Ranong and perhaps even Yangon. The product development can be adapted based on their feedback. If at this stage TOs want to visit Lampi, they should be made aware that products are a work-in-progress and that they ultimately will be run by the community.

4) *Develop the product* – firstly, it is necessary to develop infrastructure or provide the needed equipment (e.g. life jackets, walking trail, kayaking etc.) according to each product – some products don't need much equipment or any infrastructure. It is important to provide **on-job** trainings, with feedback sessions afterwards.

5) *Training for the products* – after developing the product it is necessary to develop the experience. Training on interpretation and safety is highly important for the functionality of the products.

6) *Internal testing* – it should be run with the team before taking tourists or tour operators – in the case of products fully run by the community members (service providers), therefore, fully CBT. It is also possible to have 'fake' tourists trying the products.

7) *External testing* – the products are tested by real tourists. It is possible to approach familiar hotels, such as the Penguin Hotel, and propose to some tourists the testing trip. They can provide feedback to improve the product. To avoid troubles with permits, a good solution is to do the testing with local tourists.

8) *Invite tour operators* – when the team and community are confident that the product is ready, the final step is to try to convince TOs to sell the product. Therefore, the TOs are approached twice, once at an early stage (step 3) to share ideas, and when the products are well developed, truly run by the communities and not by Oikos.

Trainings for the CBT about products should include:

- Product-related interpretation
- Product-related safety
- Product management
- Rotating systems for community participation
- Other administrative duties such as visitors' registration
- Benefit sharing – this should be structured, including the following:

1) **Service Providers**

2) **CBT Fund** and how it is sub-structured (e.g. fund for adm., community projects etc.) – it is important to sub-structure the CBT Fund as formally as possible for community transparency. Putting aside money for administrative expenses is also important to ensure the empowerment of the CBT and long-term functionality.

3) **Contribution to the Park Fund**

Benefit sharing should happen after the costs are covered. The costs are likely to be as follows:

1) **Operational costs** (e.g. fuel, food etc.)
2) **Depreciation** – this is vital for the long-term functionality of the product – for each sold activity a small fixed amount of the income should be put aside to ensure that the community is able to replace, change and even improve the product or its equipment at the end of their life or in case of accidents. Ideally the CBT should be empowered in a way that, in the long-term, it fully owns and manages the products. This empowerment should also be financial and administrative. The depreciation is calculated by estimating the lifespan of an equipment and its current market cost divided by the number of months within the total life span. For instance:

3 kayaks needed for the Tourist River Tour

- These are provided by Oikos for launching the activities
- Life span (assuming 3 years)
- Cost per unit (300,000 MMK) – total 900,000 MMK
- Divided by 36 months – 250,000
- But the operational months are (assuming) 18 months in 3 years
- Therefore, 900,000 divided by 18 months = 50,000 MMK per month should be put aside in a special fund for "depreciation" or "replacement fund. This ensures that the community will have financial independency with time.

This mechanism should be well explained and understood by the CBT groups, and it is important to apply this system from the beginning, as it is difficult to integrate it afterwards.

This calculation will also support the price structure of each product and therefore the package; in fact, the price (the money that is received by the CBT) is decided based on the following factors:

1) **Earning expectation of the service provides** – how much the discovery leaders want to earn per each village tour? It is important to meet this expectation to ensure commitment and involvement in the long term.

2) **Development costs** (even as little as 100,000 MMK) – translated into the monthly depreciation contribution that the CBT should make. At the beginning, Oikos can make a fund contribution to cover the operational and depreciation costs, as the CBT is unlikely to make enough money to cover the costs. It is important that this fund is handled by the CBT so that they practice how to manage it according to the administrative training provided. This is better than having the NGO covering the expenses as an external entity.
3) **Operational costs** – how much it costs to run a product (even as little as 2,000 MMK per visitor). This may seem little but for the local community it can be significant.
4) **The price that the tour operators are willing to pay for the products**

MARKET CHANNELS

During my visit I have identified a number of market channels. Below they are subdivided into short-term and long-term.

In the short-term, the interesting market channels are:

1) Key tour operators in Kawthaung (the ones with *market power*)
2) Wale resorts
3) Passing by tourists with sailing boats

In the long-term, the interesting market channels are:

1) Key tour operators in Ranong and Yangon
2) Resorts south of Nyaung Wee Island

Key TOs in Kawthaung include the big resorts, such as the Grand Andaman and Victoria Cliff. Other potential market channels include the sailing boat tour operators, such as Intrepid and Burma Boating. Getting in touch with them would open the possibility to integrate some of the CBT products (formally integrative) in their 5-days sailing tours. For example, Burma Boating already stops sometimes in Makyone Galet to visit the centre, the Moken Museum and the village tour. Therefore there is an opportunity to propose including these ecotourism products in their package.

The majority of tour operators in Kawthaung own the long-tailed boats. Daily trips with these boats are quite difficult from Kawthaung, unless day trips are run from Aung Bar. Although it would take time for foreigners to gain the permits, it is possible to aim at day trips for the local market: by car from Kawthaung to Aung Bar and boat trip to Lampi for day activities. A potential collaboration can be established with the Rest Camp located in Bo Cho Island to provide accommodation for visitors, thus promoting a 2-days trip instead of a 1-day trip.

The Wale Resort could be a market channel especially for the following products:

1) Short Moken Experience
2) Ecotourism products in Sitta Galet

The Wale Resort has already expressed interest in the Short Moken Experience; therefore it would be interesting to propose the following:

Half a day tour of Sitta Galet:

1) Jungle and snorkelling experience
2) Sitta Galet village tour
3) Lunch with family

As for long-term, I suggest identifying potential collaborations with other surrounding resorts and tour operators in Ranong and Yangon. The Myanmar Tour Operators Association may be interesting to meet I also advise presenting the project during the monthly CBT meeting in Yangon organised by the Tourism Transparency.

Note on Ranong – with time, when permit issues are resolved, Ranong has a big potential to attract a slice of the tourism market. There are 4 flights a week full of foreigners flying to Ranong to get to the nearby Thai islands of Ko Chang and Ko Payam. In addition, there are daily buses from Krabi and Phuket for visa run in Kawthaung. The market is there, in Kawthaung and Ranong, thus it is only a matter of working with local tour operators, matching the product offer and solving the permit issues.

Ultimately, the products should match the potential market demand, which, according to my understanding, is *soft adventure*. A product has potential not only when the place is beautiful but most importantly when there is a market for it, an interest from the tour operators.

In terms of packages these can take two forms:

1) A general tour offering a variety of experiences of culture and nature
2) An in-depth tour focusing on specific theme or set of experiences.

Below I suggest some examples of general tour that mix the available products.

PACKAGES DEVELOPMENT

Some suggested packages to think about…

Half-day trips – Sitta Galet Tour

- Pick-up from nearby resort with long-tailed boat
- Jungle trail in Sitta Galet
- Snorkelling with quiz monitoring
- Sitta Galet village tour
- Lunch with family or at the village restaurant
- Return to resort

Half-day trips – Gregories Tour

- Pick-up from visitors' centre with long-tailed boat
- On-board island hopping
- Stop at South Gregory Island for snorkelling
- Flying foxes watching over sunset (propose involvement in monitoring)
- Return to Bo Cho Island

Note: this tour would work only when visitors can stay overnight – because it may be too late to be back to mainland after sunset

4-hours Moken experience

- Pick up from resort
- Traditional fishing
- Traditional lunch on boat
- Back to resort

2-days trip from Kawthaung for local Myanmar market (overnight)

Day one

- Leave Kawthaung to Bo Cho by long-tailed boat or through Aung Bar
- Check-in at Rest Camp (or other accommodation)
- Makyone Galet Village Tour
- Lunch with local family or at village restaurant in Makyone Galet
- Tour of the Gregories until sunset
- Overnight and dinner at Rest Camp in Bo Cho Island (if collaboration is established)

Day two

- Visit the Tourist River by kayaking or walking (depending on the tide)
- Traditional lunch with local family or village restaurant in Sitta Galet
- Visit the nearby jungle trail in Sitta Galet
- Return to Bo Cho and travel back to Kawthaung

2-days trip from Kawthaung for the local Myanmar market (overnight)

- 2-days Moken experience as tested including the Crocodile River

3-days trip from Kawthaung for the local Myanmar market (overnight)

Day one

- Leave Kawthaung to Bo Cho by long-tailed boat or through Aung Bar
- Check-in at Rest Camp (or other accommodation)
- Makyone Galet Village Tour
- Lunch with local family or at village restaurant in Makyone Galet
- Tour of the Gregories until sunset
- Overnight and dinner at Rest Camp in Bo Cho Island (if collaboration is established)

Day two

- Travel to Sitta Galet
- Short mangrove/jungle trail in Sitta Galet
- Village tour and traditional lunch in Sitta Galet with family or local restaurant
- Return to Bo Cho with resting time
- Hornbill watching with sunset and snacks in proximity to Bo Cho
- Overnight at Rest Camp in Bo Cho (or other accommodation)

Day three

- Mangrove tour at Tourist River by kayaking or walking depending on the tide
- Tour of the village of Kaw Pawth with traditional lunch
- Return to Bo Cho
- Travel to Kawthaung

4-days tours for the local market

Day one

- Leave Kawthaung to Bo Cho by long-tailed boat or through Aung Bar
- Check-in at Rest Camp (or other)
- Makyone Galet Village Tour
- Lunch with local family or at village restaurant in Makyone Galet
- Tour of the Gregories until sunset
- Overnight at Rest Camp in Bo Cho

Day two

- Travel to Sitta Galet
- Short mangrove/jungle trail in Sitta Galet
- Village tour and traditional lunch in Sitta Galet with family or local restaurant
- Return to Bo Cho with resting time
- Hornbill watching with sunset and snacks in proximity to Bo Cho
- Overnight at Rest Camp in Bo Cho (or other)

Day Three

- 1-day Moken experience (including Crocodile River)
- Overnight at Rest Camp
-

Day four

- Mangrove tour at Tourist River by kayaking or walking depending on the tide
- Tour of the village of Kaw Pawth with traditional lunch
- Return to Bo Cho
- Travel to Kawthaung

5-days tour

Day one

- Leave Kawthaung to Bo Cho by long-tailed boat or through Aung Bar
- Check-in at Rest Camp
- Makyone Galet Village Tour
- Lunch with local family or at village restaurant in Makyone Galet
- Tour of the Gregories until sunset
- Overnight at Rest Camp in Bo Cho

Day two

- Travel to Sitta Galet
- Short mangrove/jungle trail in Sitta Galet
- Village tour and traditional lunch in Sitta Galet with family or local restaurant
- Return to Bo Cho with resting time
- Hornbill watching with sunset and snacks in proximity to Bo Cho
- Overnight at Rest Camp in Bo Cho

Days Three and Four

2-days Moken experience (including the overnight sleep on-board and Crocodile River)

Day Five

- Mangrove tour at Tourist River by kayaking or walking depending on the tide
- Tour of the village of Kaw Pawth with traditional lunch
- Return to Bo Cho
- Travel to Kawthaung

Other options can be developed as day trips from the south resorts once establishes a collaboration.

Single products can be also integrated in tour operators' packages, assuming they are willing to work with the CBT.

These packages ideas and the entire product are based on the full list of product potential identified by Oikos minus the products that fall within the Core Zoning Area.

With time, it would be interesting to organise a study tour for the CBT to another CBT in Myanmar.

REPORT TWO

Carrying Capacity
for the Ecotourism Activities in Lampi Marine National Park, Myanmar

Finalised: 20-02-2020 – Edinburgh, 2020

Prepared for Oikos Myanmar by Angelo Sciacca – Ecotourism and CBT Development Consultant

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INTRODUCTION

This report articulates the Ecotourism Carrying Capacity (EcCC) for the proposed ecotourism activities in Lampi Marine National Park (LMNP), Myanmar. The report describes the products in brief and the daily carrying capacity (maximum number of tourists in a day) that was calculated for each of them, along with the methodology. However, for the full computation, the attached Excel files provide a detailed picture of how the EcCC was calculated. To this extent, this report is kept as concise as possible to facilitate the reading.

WHY A CARRYING CAPACITY?

The Ecotourism Carrying Capacity (EcCC) is a planning/management tool important for many tourism areas, especially protected areas that often experience human interventions, biodiversity loss and climate change. The EcCC, together with other tools and management and monitoring strategies (e.g. PAVIM), ensures few and tolerable impacts on natural resources. Therefore, there is a need to determine the EcCC of each site to make sure the recreational activities are sustainable and long-lasting. The EcCC keeps the tourist numbers to a small scale, thus ensuring high level of satisfaction for visitors. In its broader sense, EcCC refers to the ability of an ecosystem to support an ecotourism activity.

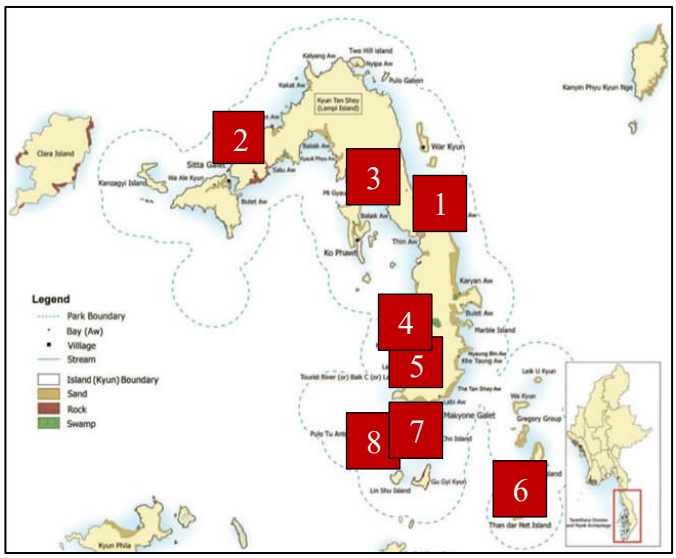
ASSESSED ECOTOURISM PRODUCTS

A total of eight ecotourism products were assessed. This list is the outcome of the total product potential identified by Oikos, minus the products that fall within the newly designated Core Zone. The following map is used in this report to indicate the ecotourism products that were assessed within the Sustainable Use Zone. These are:

1) Waterfall-Jungle Trail
2) Sitta Galet Mangrove-Jungle Trail
3) Mangrove Kayaking at the Crocodile River
4) Mangrove Kayaking at the Tourist River
5) Mangrove Walking Tour at the Tourist River

6) Snorkelling at the Gregories with on-board island hopping
7) Hornbill Watching at Bo Cho Island Roosting Site
8) Bo Cho Island Jungle Trail

The numbers on the map below correspond to the ecotourism products listed above:



SUMMARY OF CARRYING CAPACITY RESULTS (C.C. KEY)

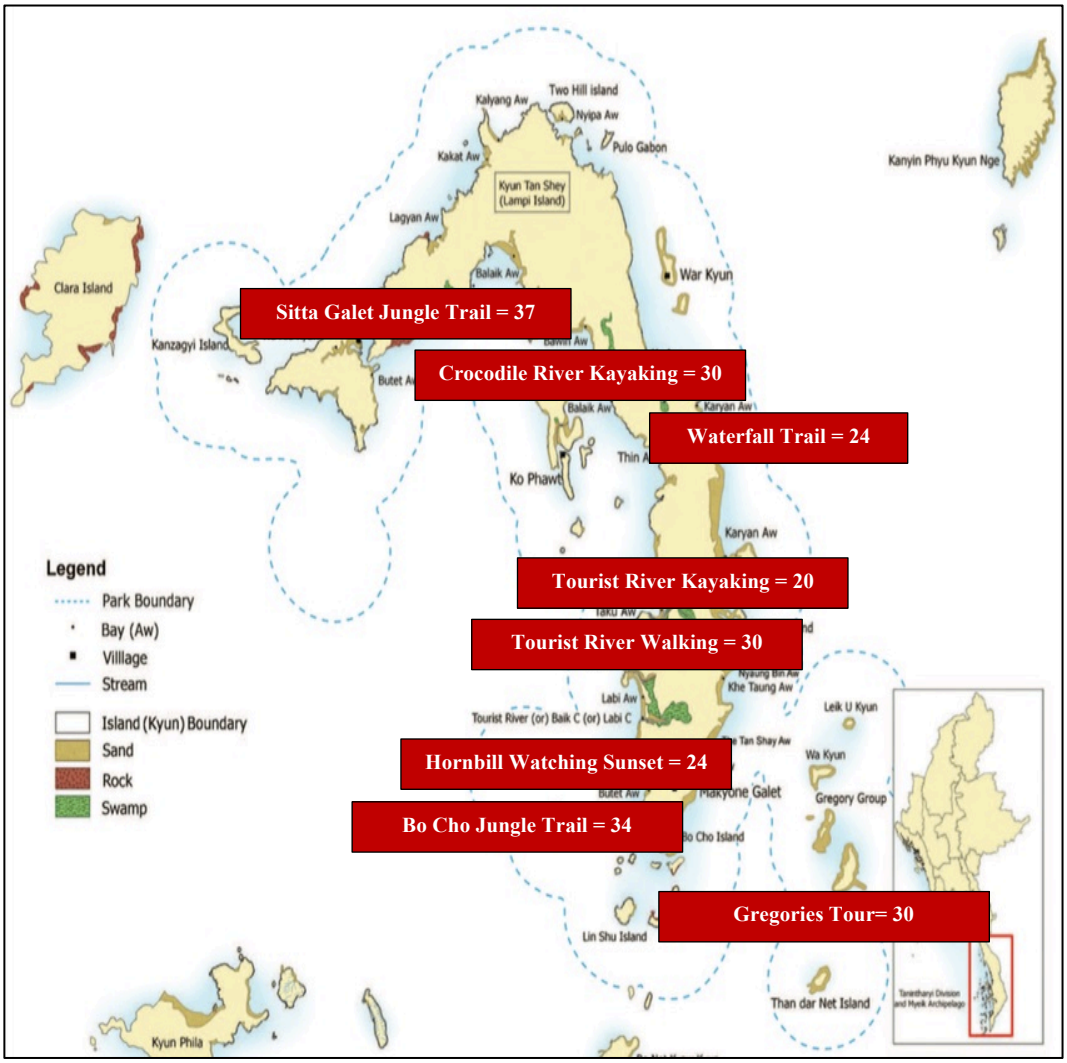
Product	Max. daily visitors EcCC	Groups	Assumed Manag. Capacity
Waterfall Jungle Trail	**24 max daily visitors (based on at least 2 trained guides)** --- **Only 1 guide trained**: **daily EcCC is 15** **2 or more guides trained: daily EcCC is 24 (MAX EcCC)**	Max. 15 people / group	2 guides available in a day to run at least 2 tours – if only 1 guide is trained for this product, the EcCC decreases to 15 daily visitors (max. group size of 1 group). However, if 3 guides will be trained, the max. daily visitors remain 24 – one guide can only do this tour once a day.

Sitta Galet Mangrove – Jungle Trail	**37 (MAX EcCC)** **No matter** how many guides are trained for this product, the **daily EcCC** always remains **37** *However:* Ideally **3 guides** should be trained	Max. 15 people / group	As an easier and shorter trail, at least 3 guides are assumed to be trained and available in a day to run at least 3 tours. As this is a short trail, 1 guide can do the tour several times in a day, so the EcCC remains 37. If more than 3 guides are trained, the max. number of daily visitors remains 37.
Crocodile River Kayaking	**5 or more guides trained: 30 max. daily visitors (15 kayaks) (MAX EcCC)** **4 guides trained**: **24 – (12 kayaks)** **3 guides trained:** **18 – (9 kayaks)** **2 guides trained:** **12 – (6 kayaks)** **1 guide trained:** **6 – (3 kayaks)**	Max. 15 people / group (high tide) In reality, given the boat capacity of carrying 3 kayaks (plus guide's kayak), 1 guide is likely to guide max. 6 visitors If boat capacity in carrying kayaks changes, stick to the **MAX 30 daily EcCC**	It is assumed that at least 5 guides will be trained for this product. If less guides are trained, the EcCC decreases due to *lower management capacity* – the tour can only occur during high tide, so one guide cannot run the same tour multiple times in a day. 2 or more groups can visit the area during high tide in a day, but each group of max. 15 people should have a different guide. If more than one group is present in the site at the same time, the tours should be dispersive enough to avoid the aggregation of the two groups and potential impacts on the site. The calculation considers also the kayak capacity of a long-tailed boat (assumed to be max. 3 kayaks). Therefore, 1 guide is needed per every 3 kayaks (6 tourists), instead of 15 tourists (max. group size).
Tourist River Kayaking	**4 or more guides trained: 20 max. daily visitors (10 kayaks) (MAX EcCC)** **3 guides trained** **18 – (9 kayaks)**	Max. 15 people / group (high tide) In reality, given the boat capacity of carrying 3 kayaks (plus guide's kayak), 1 guide is	It is assumed that at least 4 or more guides are trained for this product. The tours can only take place during high tide, so one guide is likely to be able to run max. one tour a day. By considering the common capacity of a long-tailed boat to transport 3 kayaks

	2 guides trained **12 – (6 kayaks)** **1 guide trained** **6 – (3 kayaks)**	likely to guide max. 6 visitors If boat capacity in carrying kayaks changes, stick to the **MAX 30 daily EcCC**	(plus the guide's kayak), one guide can only do a tour of 6 people each time. However, the most important value here is max. 20 daily visitors, equivalent to 10 daily kayaks.
Tourist River Walking	**Min. 2 guides trained:** **30 max. daily visitors (max. 2 groups of max. 15/group) (MAX EcCC)** **Only 1 guide trained:** **15 (max. 1 group of max. 15)**	Max. 15 people / group (low tide)	1 guide is likely to be able to run this tour only once a day due to the need of having the low tide (average 3 hours in a day) If 2 guides are trained, there is the possibility to fulfil the daily EcCC as each guide can run 1 group of max. 15 people. Even if they prefer that the tours do not overlap, the 3-hours low tide gives plenty of time to organise two distinct tours run by two different guides – this would be very challenging to do with only one guide.
Gregories Tour / Snorkelling	**3 or more guides trained:** **30 max. daily visitors – (3 boats / max. 10 tourist per boat to avoid crowd – lower satisfaction) (MAX EcCC)** **2 guides trained** **20 – (2 boats / 10 tourists per boat)**	Max. 15 people / group	A max. 10 people per boat should be applied to ensure visitors' satisfaction The activity takes place before sunset and before the flying foxes watching over the sunset. Therefore, snorkelling lasts about 1 hour. 1 guide can only run max. one tour in a day – if less guides are trained, the EcCC decreases. However:

	1 guide trained **10 – (1 boat / 10 tourists)**		The max. EcCC remains 30 people within the snorkelling tract.
Bo Cho Jungle Trail	**34 max daily visitors (MAX daily EcCC)** **At least 3 guides trained**	Max 15 people / group	Short trail can be run 1 or 2 times by the same guide in a day. The carrying capacity does not decrease with less guides, because one guide can potentially run two tours of max 15 / group. However, if groups are much smaller than 15, let's say 5, the EcCC would decrease in the instance of having only 1 guide (but this is very unlikely, as at least 3 guides will be trained).
Bo Cho Sunset / Hornbill Watching	**4 trained guides** **4 boats / average 6 tourists per boat / 24 max daily visitors (MAX EcCC)** **3 trained guides** **3 boats / max 18 people** **2 trained guides** **2 boats / 12 people** **1 guide trained** **1 boat / 6 people**	Max 15 people / group (sunset)	This activity takes place only within 1 sunset hour, so one guide can only run one tour a day – with an average of 6 tourists per boat (to maximise the experience). In case more tourists are carried in a boat, the important value is that 4 boats are allowed in a day during sunset.

Maximum daily Ecotourism Carrying Capacity assuming the availability of suggested numbers of CBT guides for each activity:



ADOPTED METHODOLOGY

In this section, the adopted methodology is simplified. The methodology follows the IUCN (International Union for the Conservation of Nature) advised process which is based on Cifuentes (1992). The EcCC is assessed for each site that is open to visitors. However, it should be noted that none of the figures can be considered definitive and they all should undergo continuous revision through insights provided by ecotourism-related monitoring (PAVIM).

During the field visit, each ecotourism site was inspected in order to identify potential *visitor-related impacts* and their driving forces. Product characteristics, site features and biodiversity data were all used to evaluate the EcCC. The whole process was framed by the newly drafted Management Plan for LMNP. The data collected during the field and post-field through the records provided by Oikos was treated numerically and following the standard formula advised by the IUCN. Although it is impossible to consider all species inhabiting the ecosystems, this EcCC has prioritised a number of species for each product, based on the georeferenced species data provided by the organisation, typical habitat usage of the species and their Red List Classification (IUCN).

The EcCC is calculated only for the ecotourism products that are planned to take place within the Sustainable Use Zone. During the field mission, some products that were classified as *potential* were included in the Core Zone, which is a zone not designated for ecotourism activities.

The EcCC is calculated for each site following 3 interrelated steps, and the maximum number of visitors identified in each step will always be less than in the previous step/s.

First step: Physical Carrying Capacity (PCC) – defined as the max. number of visitors than can physically fit into a defined space, over a particular time.

$$PCC = A\ x\ V/a\ x\ Rf$$

Where:

A = available area for public use (defined by safety issues, natural boundaries, zoning etc.)

V/a = visitors per m^2

Rf = rotation factor (number of visits per day)

$$Rf = \frac{Opening\ Daily\ Period}{Avarage\ Time\ at\ One\ Visit}$$

This is basically how many people can physically fit in the designated area

Second step: Real Carrying Capacity (RCC) – defined as the max. permissible number of visits to one site, once the **corrective factors** derived from the particular characteristics of the site have been applied to the PCC. These corrective factors are obtained by considering **biophysical, environmental, ecological, social and management variables**.

$$RCC = PCC - Cf1 - Cf2 - Cf\ 3 \ldots \ldots and\ so\ on \ldots$$

$$Cf = \frac{\mathrm{M1}}{\mathrm{Mt}}\ x\ 100$$

Where:

Cf = corrective factors (e.g. species, climate, festivities, erosion, community usage etc.)

M1 = limiting magnitude of the variable

Mt = total magnitude of the variable

The second step is the core of the carrying capacity calculation as it has to consider all potential variables. Here, it was set a max. of 17 corrective factors for species and seasonality-related issues; a max. of 6 corrective factors for daily-corrective factors; and a max. of 6 corrective factors for metres (for hiking trails and to consider potential impacts such as side-vegetation loss in trails). By using more that this max. number of corrective factors, the computation would give a max. number of 0 daily tourists, therefore not economically viable, especially for the Community-Based Tourism.

Species-related corrective factors were selected based on georeferenced data and on habitat usage. Species were prioritised. For instance, for some products it was needed to consider in the computation 12 species-related factors, while for others all 17 possible corrective factors were utilised when this was assumed to be needed.

Third step: Effective Carrying Capacity (ECC) – maximum number of visitors that a site can sustain, given the Management Capacity (MC) available.

MC is defined as the number of conditions that the protected area administration requires to carry out its functions and objectives. For instance, 1 tour guide capacity needs to manage a group of max. 15 people, 30 people will be needed for 2 guides and so on. In the absence of a clear definition of local guides that will be involved, it was assumed between 3 to 4 local guides that are likely to be available for each product.

$$ECC = RCC\ x\ MC$$

Final outcome = maximum number of visits per day that can be sustained by the site according to its micro and macro characteristics and the given management capacity.

ASSUMPTIONS

Some assumptions were made following discussion with the local team and based on the Management Plan. A first assumption made is that all activities will be guided by licensed guides and managed in a sustainable manner. The second assumption is that the active tourist season spans from mid-Nov to mid-April (this is when the majority of activities are likely to take place). The third assumption is that for about 2 weeks during the Water Festival activities will probably stop. The fourth assumption based on the Management Plan is that a visiting group can only have up to 15 people.

LIMITATION AND MONITORING

One limitation that must be mentioned here is related to the definition of products. For instance, as for the durations of the tours, specific trails were evaluated during the field mission, therefore several products' characteristics are decided on the basis of the visits and discussions with the local team. These characteristics considered in the computation can slightly change in the future as the products develop. Furthermore, records on herpetofauna species are still at a draft phase, missing the georeferencing that helps prioritise species to consider for the computation of the EcCC. Moreover, species that could be under pressure from tourism activities in a specific site have been considered in relation to the entire tourist season, rather than peaks of potential visitor-related pressures (e.g. breeding season within the tourist season).

It also must be briefly discussed that the EcCC should be supported by regular monitoring campaigns of the site's physical attributes and the biodiversity resident of that area. The PAVIM methodology can be used for such activities, given for granted that acceptable standards for each indicator are established by experts on specific abiotic and biotic elements of the park. Moreover, the EcCC should be reviewed regularly. In fact, it is not a definitive value. Changes on the ecosystem can occur as a result of different factors that can be natural or human-driven.

ZONING SCHEME OF LAMPI MARINE NATIONAL PARK

The newly drafted Management Plan for LMNP establishes a zoning scheme with four main zones. The assessed products are all located within the Sustainable Use Zone. The main ecotourism-related guidelines of this zone are as briefly described below:

1) Hiking and walking in the rainforest can be promoted only in designated walking trails, accompanied by trained, professional guides (max 15 people/group).

2) Visit and other activities with volunteers at turtle nesting sites can be promoted only if accompanied by trained, professional guides (max 15 people/group).

3) Visits to mangrove forest are allowed only if accompanied by trained, professional guides (max 15 people/group). This activity is allowed using only canoes and only during daytime (two hours after sunrise – two hours before sunset) to avoid disturbance of birds.

4) Diving and snorkelling are allowed only in designated areas, accompanied by trained guides (max 15 people/group). The activities are allowed only in compliance with specific rules, in order to avoid damages to natural resources (not touching corals with fins, not trying to approach sea turtles etc.).

5) Birdwatching is allowed with restriction in order to avoid any kind of disturbance to wildlife. For observation of hornbill and flying foxes at roosting sites, boats need to stay no closer than 200m from the roosts, with engines off.

These are key details to consider when defining the EcCC for LMNP.

HOW TO USE THE CARRYING CAPACITY

The EcCC is defined for each site. This is because each ecotourism location has its own characteristics: physical or in terms of biodiversity. The 8 EcCC assessed for LMPN suggest different daily limits. Simply, when activities are promoted in package tours, the lowest EcCC value should be followed. Therefore, it is not a unique value for the entire park, but instead the EcCC for each package tour is defined by the lowest carrying capacity value among the included ecotourism activities in the tour.

Example of tour activity

1. Hornbill watching: 40 max daily participants
2. Mangrove walking tour: **25** max daily participants
3. Bo Cho Jungle Trail: 30 max daily participants

In this case, the tour carrying capacity will be 25 daily participants. The same reason is applied for tours of several days in which the number of participants should be defined by the lowest carrying capacity value. This ensures that tours are promoted considering the most fragile ecotourism site among all of the sites/activities included.

An example of a 2-days tour:

Day one

1) Makyone Galet Village Tour
2) Lunch with family
3) Tour of the Gregories (e.g. **max 20**)

Day two

4) Kayaking in the Tourist River (e.g. **max 30**)
5) Traditional lunch
6) Sitta Galet Jungle Trail (e.g. **max 25**)

In this example, the EcCC will be maximum 20 people in a day in order to ensure that the most fragile site to ecotourism activities is respected. Certainly, as the project develops, these can be organised in different ways in order to meet the EcCC standards.

The next sections will cover each of the ecotourism products, briefly describing the activity to articulate the EcCC for the specific ecotourism site. It is important to note that while this report seeks to provide a description as detailed as possible for each EcCC, the full computation is reported in the Excel files that are attached to this descriptive report.

CARRYING CAPACITY OF WATERFALL JUNGLE TRAIL

THE PRODUCT IN BRIEF

The Waterfall Jungle Trail takes place in the eastern part of Lampi Island. This experience involves trekking a riverbed inside the jungle until reaching a waterfall up the mountain. The trail is about 1,500 metres, comprising a total area of 5,625 m^2. *These are the most precise information at this stage of product development*. The trail is formed by two main sections: 1st section of about 150 metres and 1.5 metres wide, and a 2nd section of about 1350 metres for 4 metres wide. This 2nd section is also very rocky.

The characteristic of being a rocky path, while making the trail more challenging, decreases its vulnerability to side-vegetation loss, which is a typical impact of nature trails that are not equipped with e.g. wooden pathways. For maximising the experience, it was assumed that only one group at a time can access the trail. This is also highlighted in the newly drafted Management Plan which clearly states that groups of tourists should not exceed 15 people. During the calculation of the EcCC it was assumed that one visitor needs

at least 1.5 m^2 to move freely and safely throughout the trail. Moreover, the field testing has suggested that 2.5 hours are needed to fully experience the trail, in a safely and engaging manner.

DAILY CARRYING CAPACITY

27 maximum daily visitors

27 maximum daily visitors can visit the site in two groups of not more than 15 people each. The computation has considered different factors related to the product characteristics and potential impacts that visitors can have on the site. In addition, it was assumed that 3 daily guides would be trained and available for this specific product.

These potential impacts are classified into two main categories:

1) Side-vegetation loss, leading to soil erosion and negative impacts on micro-organisms;
2) Wildlife disturbance – mainly birds.

The driving force of the first category impact, side-vegetation loss, is related to soil trampling. This is

a common occurrence in nature trails, especially when walking infrastructures are not built. Some areas can be more at risk than others. In the Waterfall Jungle Trail, the majority of the trail is not at risk, as it is wide and very rocky (as shown in the picture), therefore the creation of informal trails or side-trail widening is very unlikely. However, during the field assessment, 99 metres of the trail were found to be a high risk to loss of side-vegetation. This concerns with the 1st section of the trail that is very narrow and earthy, rather than rocky. Here, vegetation loss can be provoked by soil compaction through trampling. Continuous trampling reduces the ability of the soil to recover, due to the decrease in abundance of active roots. Soil trampling disrupts the habitat of micro-organisms and affects the natural-drainage system of the area as well its permeability level.

In terms of wildlife disturbance, a number of key species were considered in the computation. These species were taken from the organisation's records and were selected based on their georeferencing, habitat usage and the extent to which they are likely to affected by tourism activities proposed in that area.

Visitors' noise and their regular presence can often have an impact on the way some species use their habitat (e.g. foraging, breeding etc.). These direct impacts can in turn lead to indirect impacts on the local ecosystem (e.g. disrupting relationships between species within an ecosystem). Therefore, it was critical to consider as many species as possible in the computation. The species considered in the EcCC of the Waterfall Jungle Trail are birds, mammals and herpetofauna.

These species have been recorded in the trail area and are likely to use this habitat regularly. For this reason, any impact from tourism activities would have a direct effect on their species composition, selection of foraging ground, and breeding activities. Some species are also likely to become habituated to regular human activities, which in turn could affect their biological behaviour. For instance, habituation is common among primates. The mere presence of people can disrupt the activities of wildlife (particularly birds and large mammals).

The following species listed are either georeferenced at the specific site or typically use the habitat. These two criteria, georeferencing and habitat usage, have been used to select one species rather than the other. In addition, in certain cases the IUCN classification has helped prioritising one species over another.

BIRD SPECIES CONSIDERED IN THE COMPUTATION			
COMMON NAME	SCIENTIFIC NAME	CLASSIFICATION	DETAILS
Green Imperial Pigeon	*Ducula aenea*	Least Concern	Frequently georeferenced Typical of this habitat Tends to live in low section of the forest
Brown-Winged Kingfisher	*Pelargopsis amauroptera*	Nearly Threatened	Selected because it is common near streams (such as the trail) and currently is a vulnerable species – georeferenced in the trail area
Oriental Pied Hornbill	*Anthracoceros albirostris*	Least Concern	Common presence in the area – georeferenced in the area
Plain Pouched Hornbill	*Rhyticeros subruficollis*	Vulnerable	Vulnerable species – georeferenced in the area and its presence confirmed during site inspection
Black Naped Oriole	*Oriolus chinensis*	Nearly Threatened	Found in forest – georeferenced in the area – regular human presence is likely to disturb its feeding activities mainly on forest berries – the current IUCN status prioritises this species
Greater Racket-Tailed Drongo	*Dicrurus paradiseus*	Least Concern	Although usually living the high branches it is a common species in the trail area
Black Naped Monarch	*Hypothymis azurea*	Least Concern	Of forest habitant – the trail area is one of the three places where this species was georeferenced during monitoring activities
Asian Fairy-Bluebird	*Irena puella*	Least Concern	Widely present, being georeferenced in the area
Common Hill Myna	*Gracula religiosa*	Least Concern	Widely present, being georeferenced in the area
Dark Necked - Tailorbird	*Orthotomus atrogularis*	Least Concern	Widely present, being georeferenced in the area
MAMMALS SPECIES CONSIDERED IN THE COMPUTATION			
Lesser Mousedeer	*Tragulus kanchil*	Least Concern	Widely present in the area; subject to human pressure; active in early morning and before sunset; presence of people near the main water stream could potentially disrupt the species access to water sources as well as impact its usage of the habitat
Long Tailed Macaque	Macaca fascicularis	Least Concern	Present in the area; especially during low tide in proximity to the trail entrance where macaques are used to picking oysters and other food sources; disturbance can also occur inside the forest
HERPETOFAUNA CONSIDERED IN THE COMPUTATION			
Common Water Monitor	Varanus salvator	Least Concern	Living near streams (such as the trail area which follows a stream) – it is a shy species and very sensitive to human presence

The species mentioned in the table are not the only ones that could be affected by the tourism activities in the specific area. However, a limit to the number of species considered in the computation was set in order to ensure that the EcCC still is economically viable for the CBT development of the park.

Birds are highly subject to pressures where nature treks are promoted. For this reason, a larger number of bird species was considered in the computation of the EcCC. Birds have usually very low human-presence tolerance, especially species that typically inhabit lower sections of the forests. For instance, a Green Imperial Pigeon is likely to be more vulnerable to human activities than an eagle species. In turn, regular disturbance of eagles' preys may have an indirect impact on eagles' hunting activities in that specific area.

However, for this computation, it was only necessary to narrow down the species that could be under most pressure and reach a reasonable max. daily visitors' numbers that can still provide significant economic benefit to the CBT as part of the CBT scheme. It must be mentioned that the most sensitive areas of the park have already be identified as Core Zone in the newly drafted Management Plan where 0 visitors are allowed.

CARRYING CAPACITY OF SITTA GALET MAGROVE-JUNGLE TRAIL

THE PRODUCT IN BRIEF

The Sitta Galet Mangrove – Jungle Trail is a short trail taking place on the northwest section of Lampi Island, in front of Sitta Galet Village. The trail falls within the Sustainable Use Zone of LMNP and has the same potential impacts identified in the Waterfall Trail. The trail is about 950 metres long. The 1st section passes through mangroves, it is about 40 metres-long and, on average, 1 metre-wide. The 2nd section of the trail is about 25 metres-long and on average 1 ½ metres-wide. The remaining trail is about 885 metres-long and 3 metres-wide and it is characterised by forest habitat. The area is equivalent to 2,732 m^2. These details were used to compute the EcCC together with an assessment of the potential user-related impacts. During the testing, it was considered that the average

total duration of the tour is appx. 1 hour. It is estimated that 1 visitor needs 1.5 m^2 to move freely and safely as some sections of the trail are very rocky.

DAILY CARRYING CAPACITY

37 maximum daily visitors

This max. number of daily visitors can be promoted in 3 or more groups of max. 15 people/group.

Two distinct sections of the trail were identified to be at risk of trampling. The 1st section (mangrove) measuring about 40 metres is at high risk of trampling and potential breakage of most fragile roots. The risk is accentuated by the fact that the trail in this section is very narrow (1 metre) and especially during the high tide the underwater visibility can decrease, with higher likelihood of trampling the mangrove roots.

The 2nd section of the trail was also identified to be at risk of side-vegetation loss. This accounts for 25 metres of the total trail. In this section the trail is very narrow (1 ½ metres), very earthy and composed by fragile side vegetation. Loss of patches of this vegetation may lead to habitat loss for small organisms that find shelter in such habitats.

In addition to these details, a number of species was considered in the computation in relation to the georeferencing, typical habitat and, in certain cases, their IUCN classification. The species are listed in the table below.

BIRD SPECIES CONSIDERED IN THE COMPUTATION			
COMMON NAME	SCIENTIFIC NAME	CLASSIFICATION	DETAILS
Emerald Dove	*Chalcophaps indica*	Least Concern	The trial area is one of the few areas where this species was georeferenced – lives close to mangroves and low-land forests
Brown-Winged Kingfisher	*Pelargopsis amauroptera*	Nearly Threatened	Common near streams (such as the trail) and currently it is a vulnerable species – georeferenced in the trail area – the IUCN status prioritises this species
Oriental Dwarf kingfisher	*Ceyx erithaca*	Least Concern	Water streams (such as the trail) are a common habitat for this species – georeferenced only in 2 locations, 1 of each is Sitta Galet area
Plain Pouched Hornbill	*Rhyticeros subruficollis*	Vulnerable	Vulnerable species – present in the area of the trail; spotted during the product inspection
Golden Bellied Gerygone	*Gerygone sulphurea*	Least Concern	Only georeferenced in the trail area – uses moist forests near streams and mangroves
Lesser Green Leafbird	*Chloropsis cyanopogon*	Near Threatened	Nearly threatened, especially by human activities – georeferenced in the trail area
Streaked Bulbul	*Ixos malaccensis*	Near Threatened	Only georeferenced in the trail area – uses moist forests near streams and mangroves; currently threatened by human activities
Burmese Yuhina	*Yuhina humilis*	Least Concern	Only georeferenced in the trail area – uses moist forests near streams and mangroves
MAMMALS SPECIES CONSIDERED IN THE COMPUTATION			
Lesser Mousedeer	*Tragulus kanchil*	Least Concern	Widely present in the area – subject to human pressure; active also in early morning and before sunset; presence of people near the main water stream could potentially disrupt the species access to water sources as well as impact on usage of the habitat
Long Tailed Macaque	*Macaca fascicularis*	Least Concern	Present in the area – especially during low tide in proximity to the trail entrance where macaques are used to picking oysters and other food sources. Disturbance can also occur inside the forest
Smooth Coated Otter	*Lutrogale perspicillata*	Vulnerable	Georeferenced in the area – common to live in proximity to fresh water (the trail area is a suitable habitat for this species) – IUCN status as vulnerable prioritises this species in the computation
HERPETOFAUNA CONSIDERED IN THE COMPUTATION			
Common Water Monitor	*Varanus salvator*	Least Concern	Living near streams (such as the trail area which follows a stream) – it is a shy species and very sensitive to human presence

CARRYING CAPACITY OF KAYAKING THE CROCODILE RIVER

THE PRODUCT IN BRIEF

This kayak activity takes place in the Crocodile River. The carrying capacity calculated for this product refers only to the allowed daily max. number of tourists during the high tide. The estimated activity area was calculated to be 177,152 m^2. A specific trail could not be designed, as the kayaking activities can only take place in the wider and initial section of the river (see Google Earth Capture below). This is because the smallest channels located upstream are designated as Core Zone due to their higher sensitivity to human activities.

Here, it was established that one canoe has a total capacity of 2 people that need about 10 m^2 to move freely and safely and to ensure high visitors' satisfaction. It was assumed that the tour would last not more than 1 hour. The map below shows the estimated area to be used by the visitors during the activity. It may be less than what showed in the map, but it is unlikely to be more than what is delineated.

DAILY CARRYING CAPACITY

The identification of specific visitor-related potential impacts and the characteristics of the product led to establishment of a daily EcCC for the Kayaking Tour at the Crocodile River of:

30 maximum daily visitors (only during the high tide) – or 15 daily kayaks split in 2 or more groups of max 15 people/group

The impacts that can potentially occur are mainly related to the regular presence of people in the area. This is mainly related to the potential of visitors' noise that can affect the behaviour of local wildlife, especially birds and mammal. This is the case when the kayaking activities are conducted by the edges of the mangrove forest as this would lead to closer proximity between visitors and the birds and mammals in the area. No other relevant potential impacts were identified during the inspection. As the kayaking activities take place in a wide area, it was assumed that no relevant impacts can be incurred by reptiles. It is also presumed that anchoring activities do not take place in the area (using buoys instead), thus not causing any impact on corals or sensitive areas of the sea or riverbed.

At the moment, the tour may take place on a wide area, because a specific trail has not been yet designated. It is suggested that a trail/way is defined so that the potential tourism pressure may be confined on a specific area, rather than being very dispersive.

In the absence of potential physical impacts, the corrective factors considered in the computation are only related to bird and mammal species, as these may become under pressure as a result of regular tourism activities. These species are listed in the following table. No herpetofauna was considered, since kayaking activities do not take place in narrow mangrove channels and it is very unlikely to provoke any disturbance to reptiles – or, if this occurs, it will probably be very minimal.

BIRD SPECIES CONSIDERED IN THE COMPUTATION			
Common Name	Scientific Name	Classification	
Dark Necked Tailorbird	*Orthotomus atrogularis*	Least Concern	Typically found in mangrove forest – georeferenced in the area
Asian Glossy Stirling	*Aplonis panayensis*	Least Concern	Using mangrove forest and likely to be present in the area of the ecotourism activity
Grey Wagtail	*Motacilla cinerea*	Least Concern	Usually found in water habitat such as mangrove and likely to be present in the area of the ecotourism activity
Greater Green Leafbird	*Chloropsis sonnerati*	Vulnerable	Vulnerable species and usually present in mangrove habitats
Mangrove Whistler	*Pachycephala cinerea*	Least Concern	Common species of mangrove forest and likely to be present in this area
Golden Bellied Gerygone	*Gerygone sulphurea*	Least Concern	Usually in mangrove habitats and likely to be present in the area of the ecotourism activity
Mangrove Pitta	*Pitta megarhyncha*	Near Threatened	Threatened species – common in mangrove and likely to be present in the area of the ecotourism activity
Black Capped Kingfisher	*Halcyon pileata*	Least Concern	Common presence in Lampi's mangrove forest and likely to be under pressure by tourism activities
Brown-winged kingfisher	*Pelargopsis amauroptera*	Nearly Threatened	Threatened species – found in mangroves – eat especially crabs, therefore using the edges of mangroves as feeding ground – likely to be highly disturbed by kayaking activities
Black Bellied Malkoha	*Phaenicophaeus diardi*	Nearly Threatened	Declining species – using mangroves habitats such as the Crocodile River – likely to be under pressure by frequent ecotourism activities
Pink Necked Green Pigeon	*Treron vernans*	Least Concern	Common species in Lampi – among preferred habitat, mangroves forests are common areas where this species can be found
Emerald Dove	*Chalcophaps indica*	Least Concern	Common species in Lampi – among preferred habitat, mangroves forests are common areas where this species can be found
Whimbrel	*Numenius phaeopus*	Least Concern	Common in mangroves edges where it harvests crustaceans – feeding activities can significantly be disrupted by frequent kayaking activities
Beach Thick - Knee	*Esacus magnirostris*	Near Threatened	Common in mangroves edges where it harvests crustaceans – feeding activities can significantly be disrupted by frequent kayaking activities – prioritised as a threatened species

MAMMALS SPECIES CONSIDERED IN THE COMPUTATION			
Long Tailed Macaque	*Macaca fascicularis*	Least Concern	Widely present in this area – spotted several times during product inspections – frequenting mangroves edges to harvest crustaceans – feeding activities can be disturbed – species easily subject to habituation with indirect negative impacts
Northern Pig - Tailed Macaque	*Macaca leonine*	Vulnerable	Widespread in this area – vulnerable species that can be easily under pressures by regular kayaking activities

CARRYING CAPACITY OF KAYAKING THE TOURIST RIVER

THE PRODUCT IN BRIEF

This tour is different than the one that takes place in the Crocodile River. As the Sustainable Use Zone is wider and deeper in the Tourist River, the computation for the kayaking activities in this area was done differently. During the testing, it was measured a water-trail for the kayaking activities of about 600 metres of small channels that can be visited, and on average 5 metres-wide.

This is the equivalent of 3000 m^2 that were considered in the computation as a base data. The tour takes appx. 1 hour and can only be promoted during the high tide. Therefore, the EcCC calculated for this product refers to the max. number of tourists that can take part in a day to do this activity. It was assumed that to move freely and safely one kayak needs appx. 10 m^2 in the mangrove channel.

Area of mangrove channels where the tour is expected to take place

DAILY CARRYING CAPACITY

The identification of specific visitor-related potential impacts and the characteristics of the product led to the establishment of a daily EcCC for the Kayaking Tour in Tourist River of:

20 maximum daily visitors (restricted only during the high tide)

2 or more groups of no more than 15 people/group

Similar to the kayaking tours in the Crocodile River, the potential impacts associated to the kayaking tour in the Tourist River are mainly related to potential wildlife disturbance. For the computation, a number of species was considered to be vulnerable to regular kayaking activities. These species are birds, mammals and one species of reptile. This is a highly sensitive area, as kayaking activities are promoted in narrow mangrove channels, creating a tight human-wildlife proximity.

This close proximity can provoke a variety of significant negative impacts, especially on birds which are highly sensitive to human presence and noise. Impacts that can occur are mainly related to changes in the way birds use their mangrove habitat, altering their biological behaviour and, in certain cases, leading to them consuming a larger amount of energy as a result of increased stress and changes in biological habits.

It must be mentioned that a key assumption made in this computation is that tourists will not be allowed to disembark the kayaks. Therefore, if sustainably managed, the kayaking activities are likely to have very limited impact on the local mangrove ecosystem. However, the potential pressure on a selected number of species was considered to ensure the small scale of this activity. In addition to birds, it was important to consider the Long-Tailed Macaque and the Monitor Lizard as they are very sensitive to human activities in the mangrove. Especially the Monitor Lizard is a very shy species that tends to shift its habitat as a result of human presence. As shown in the table, various species of kingfisher were included as corrective factors in the computation, since they tend to use the mangrove as hunting ground and any human regular human presence can potentially disrupt their foraging activities.

BIRD SPECIES CONSIDERED IN THE COMPUTATION			
COMMON NAME	SCIENTIFIC NAME	CLASSIFICATION	DETAILS
Whimbrel	*Numenius phaeopus*	Least Concern	Common in mangroves edges where it harvests crustaceans – feeding activities can significantly be disrupted by frequent kayaking activities – rich presence in this area
Emerald Dove	*Chalcophaps indica*	Least Concern	Common species in Lampi – among preferred habitat, mangroves forests are common areas where this species can be found – rich presence
Pink Necked Green Pigeon	*Treron vernans*	Least Concern	Common species in Lampi – among preferred habitat, mangroves forests are common areas where this species can be found – rich presence i
Greater Coucal	*Centropus sinensis*	Least Concern	Rich presence of this species in this area according to georeferenced record
Brown-winged kingfisher	*Pelargopsis amauroptera*	Nearly Threatened	Threatened species – found in mangroves – eat especially crabs, therefore using the edges of mangroves as feeding ground – likely to be highly disturbed by kayaking activities, especially in small mangrove channels
Ruddy Kingfisher	*Halcyon coromanda*	Least Concern	Only georeferenced in the area of the Tourist River; eat especially crabs, therefore using the edges of mangroves as feeding ground – likely to be highly disturbed by kayaking activities, especially in small mangrove channels

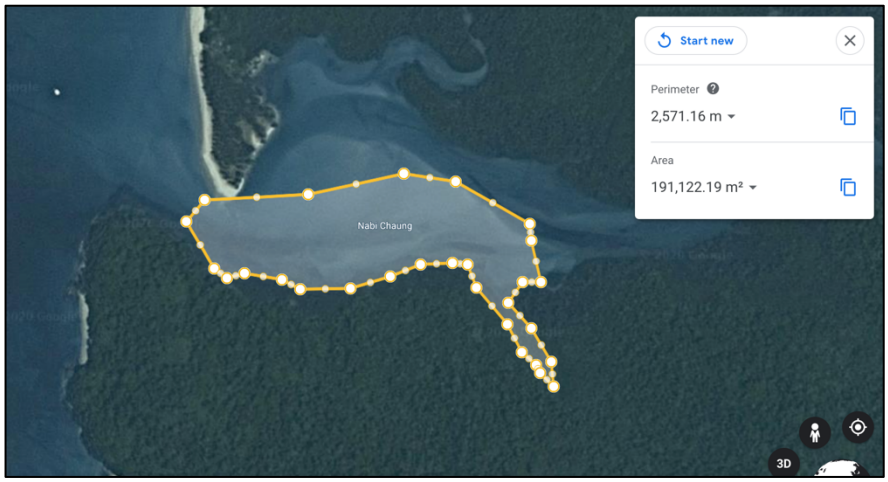
Black Capped Kingfisher	*Halcyon pileata*	Least Concern	Common presence in Lampi's mangrove forest – especially in the Tourist River and likely to be put under pressure by tourism activities especially in small mangrove channels
Collared Kingfisher	*Todiramphus chloris*	Least Concern	Common presence in Lampi's mangrove forest – especially in the Tourist River and likely to be put under pressure by tourism activities in small mangrove channels
Black Naped Monarch	*Hypothymis azurea*	Least Concern	Present in woodland and mangrove habitats – georeferenced in the area – potentially subject to pressure from tourism activities
OTHER SPECIES CONSIDERED IN THE COMPUTATION			
Long Tailed Macaque	*Macaca fascicularis*	Least Concern	Widely present in this area – spotted several times during product inspections – frequenting mangroves edges to harvest crustaceans – feeding activities can be disturbed – species easily subject to habituation with indirect negative impacts
Common Water Monitor	*Varanus salvator*	Least Concern	Living near streams (such as the trail area which follows a stream) – it is a shy species and very sensitive to human presence

CARRYING CAPACITY OF THE WALKING TOUR AT THE TOURIST RIVER

THE PRODUCT IN BRIEF

This activity can only occur during the low tide, which is an average of 3 hours daily. According to the field-testing, the trail perimeters account for about 2,571 metres, with an area that can potentially be used in the tour of 191,122 m^2. It was estimated that in this typology of walking tour one visitors uses about 2 m^2 to move freely. The tour takes appx. 1 ½ hour to be completed.

As showed in the map, the trail extends inside a channel to enrich the experience.



Area expected to be used during the tour based on the field testing

DAILY CARRYING CAPACITY

By considering the different potential impacts, it was calculated that the max. number of daily visitors should be set at:

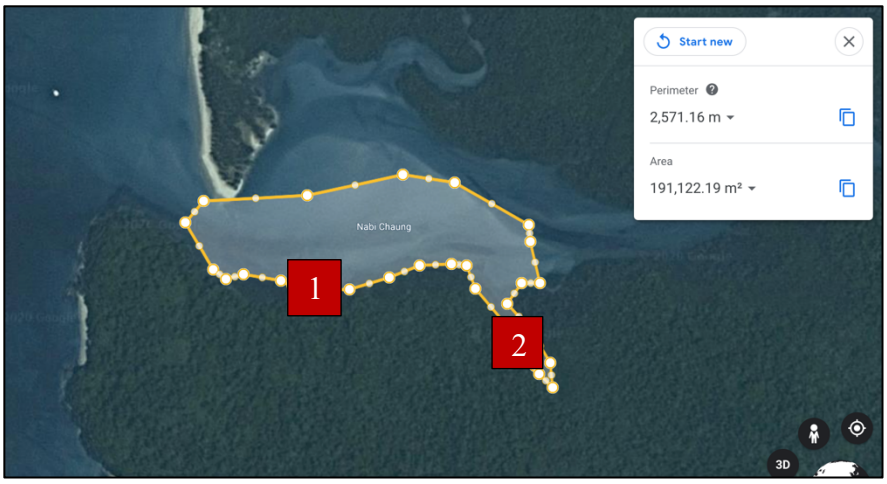
30 maximum daily visitors (restricted only during the low tide) –

2 or more groups of no more than 15 people/group

This limit is the result of a computation that considers few potential impacts that can be caused by the activity. A total of two sections of the trail estimated perimeter were assessed as high-trampling risk areas. A first section (see figure) subject to trampling accounts for 674.83 metres of the entire trail perimeters.

This refers to the whole trail section that coasts the mangroves. In the low tide, when the tour takes place, these coastal edges of the mangroves are inhabited by a variety of species, such as echinoderms. These often can hardly be seen and, therefore, can be easily stepped on by visitors. This area has been classified in this EcCC computation as vulnerable.

A second section of the trail perimeter identified as vulnerable to trampling is the small mangrove channels. Although this is a highly muddy area, regular visits and repeated floor compaction can, in the long-term, lead to change in the composition of this area. Furthermore, regular stepping can have significant impact on micro fauna that find shelter in these narrow and muddy sections of the trail. The section that was classified as vulnerable accounts for 790 metres of the entire estimated trail.



Most vulnerable sections of the trail

Walking by the mangroves in close proximity is likely to generate significant pressures on key fauna species common in this habitat. Here, birds and mammals were considered, but also some species of snakes were included in the computation. While impacts on snakes' behaviour are highly unlikely to occur from far visitors' observation, such as in the case of river kayaking, walking throughout the mangrove can certainly increase the probability of provoking visitor-related pressures on some species of herpetofauna. To this extent, common snakes' species in the mangrove were considered in the computation. Given the absence of georeferenced data for herpetofauna, species of snakes were selected only on the basis of typology of habitat.

BIRD SPECIES CONSIDERED IN THE COMPUTATION			
COMMON NAME	SCIENTIFIC NAME	CLASSIFICATION	DETAILS
Whimbrel	*Numenius phaeopus*	Least Concern	Common in mangroves edges where it harvests crustaceans; feeding activities can significantly be disrupted by frequent walking activities – rich presence in this area
Emerald Dove	*Chalcophaps indica*	Least Concern	Common species in Lampi – among preferred habitat, mangroves forests are common areas where this species can be found – rich presence
Pink Necked Green Pigeon	*Treron vernans*	Least Concern	Common species in Lampi – among preferred habitat, mangroves forests are common areas where this species can be found – rich presence
Greater Coucal	*Centropus sinensis*	Least Concern	Rich presence of this species in this area according to georeferenced record
Brown-winged kingfisher	*Pelargopsis amauroptera*	Nearly Threatened	Threatened species – found in mangroves – eat especially crabs, therefore using the edges of mangroves as feeding ground – likely to be highly disturbed by walking activities, especially in the small mangrove channel
Ruddy Kingfisher	*Halcyon coromanda*	Least Concern	Only georeferenced in the area of the Tourist River, eat especially crabs, therefore using the edges of mangroves as feeding ground – likely to be highly disturbed by walking activities in small mangrove channels
Black Capped Kingfisher	*Halcyon pileata*	Least Concern	Common presence in Lampi's mangrove forest – especially in the Tourist River and likely to be put under pressure by tourism activities especially in small mangrove channels
Collared Kingfisher	*Todiramphus chloris*	Least Concern	Common presence in Lampi's mangrove forest – especially in the Tourist River and likely to be put under pressure by tourism activities especially in small mangrove channels
Black Naped Monarch	*Hypothymis azurea*	Least Concern	Present in woodland and mangrove habitats – georeferenced in the area – potentially subject to pressure from tourism activities
Common Sandpiper	*Actitis hypoleucos*	Least Concern	Rich this area – using mangrove edges and sandy areas of the trail – high disturbance can occur
MAMMALS SPECIES CONSIDERED IN THE COMPUTATION			
Long-Tailed Macaque	*Macaca fascicularis*	Least Concern	Widely present in this area – spotted several times during product inspections – frequenting mangroves

Northern Pig Tailed Macaque	*Macaca leonina*	Vulnerable	Living near streams (such as the trail area which follows a stream) – it is a shy species and very sensitive to human presence
Dusky Lungur	*Trachypithecus obscurus*	Nearly Threatened	Common in this area and vulnerable – characterised by diurnal activities, this species can be put under pressures by regular walking activities
HERPETOFAUNA CONSIDERED IN THE COMPUTATION			
Common Water Monitor	*Varanus salvator*	Least Concern	Living near streams (such as the trail area which follows a stream) – it is a shy species and very sensitive to human presence
Reticulated python	*Malayopython reticulatus*	Least Concern	Common snake species in the mangrove – daily activities can potentially disrupt its habitat usage
Yellow Lipper sea krat	*Laticauda colubrina*	Least Concern	Common in the mangrove, this species can easily be affected by human activities
Mangrove Pit Viper	*Cryptelytrops purpureomaculatus*	Least Concern	Common in the mangrove habitat

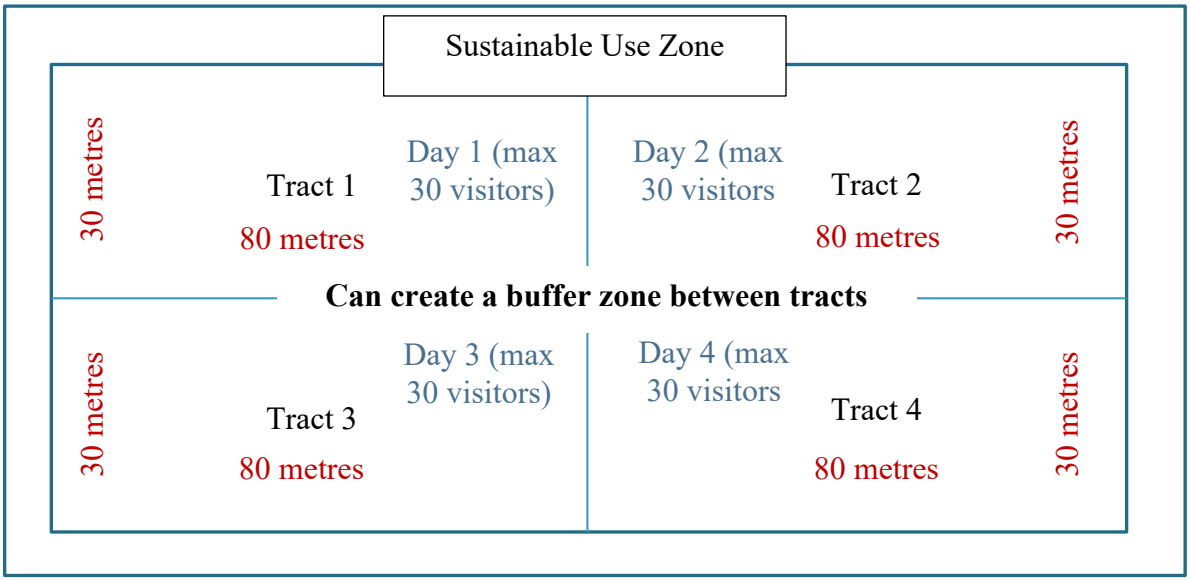
CARRYING CAPACITY OF SNORKELLING THE GREGORIES

THE PRODUCT IN BRIEF

The snorkelling activities in the Gregories are included in the Gregories Tour. Snorkelling takes place before the sunset as part of the tour that ends with flying foxes watching. Here, snorkelling activities are assumed to last about 1 hour. The activity takes place in a designated Sustainable Use Zone, off the shores of the South Island of the Gregories.

The EcCC for this activity was calculated by considering the creation of 4 tracts of 80 metres x 30 metres. Simply, each day, the snorkelling activities will take place in the next tract, thus minimising everyday pressures on the coral reef ecosystems. Accordingly,

each tract would be visited for about 32 days in a tourist season (1 times every 4 days). Buoys can be installed to avoid anchoring activities.



DAILY CARRYING CAPACITY

By considering the tract systems, no impact from anchoring was considered – only potential wildlife disturbance, both marine and birds. The EcCC for the snorkelling activities at this site is of:

30 max. daily people as part of the Gregories Tour / or as a solo activity

For this computation, a number of species was considered to be potentially affected by regular snorkelling activities. Birds were also considered as they can be impacted by boat and visitors' noise. These are listed in the following table. In particular for turtles, snorkelling activities have the potential to disrupt their feeding habit if they use the area as a feeding ground. For this reason, three species of turtles were considered in the computation. All of them are critically endangered or endangered as classified by the IUCN. Moreover, all key bird species that are likely to regularly use the area were considered in the computation.

It must be noted that several visitors' impacts can occur when swimming. These are mainly related to coral breakages with fins, turtles' harassment etc. It is assumed, as mentioned in the Management Plan, that visitors will be informed about best practices. However, in the computation, a corrective variable was

considered that concerns the coral reef as a whole ecosystem, which is under pressure as a result of visitors' activities. This was important to further decrease the allowed max. daily visitors' numbers because, while the tract systems alleviate the pressure on the coral reef, it does not eliminate them.

BIRD SPECIES CONSIDERED IN THE COMPUTATION			
COMMON NAME	SCIENTIFIC NAME	CLASSIFICATION	DETAILS
Beach Thick - Knee	*Esacus magnirostris*	Nearly Threatened	Beach habitat – vulnerable species and georeferenced in the snorkelling area
Eurasian Curlew	*Numenius arquata*	Nearly Threatened	Vulnerable species classified as nearly threatened – using beach and coastal areas – georeferenced in the snorkelling area
Nicobar Pigeon	*Caloenas nicobarica*	Nearly Threatened	The pigeon is commonly found in the Gregories more than any other area of the park – potentially vulnerable to regular boat activities
Lesser Sand Plover	*Charadrius mongolus*	Least Concern	Common in beach and coastal areas of the park – potentially affected by boat activities
Greater Sand Plover	*Charadrius leschenaultii*	Least Concern	Common in beach and coastal areas of the park – potentially affected by boat activities
MARINE SPECIES CONSIDERED IN THE COMPUTATION			
Green Turtle	*Chelonia mydas*	Endangered	Endangered – the area can potentially be used as a feeding ground – once individual was spotted during site inspection
Hawksbill Turtle	*Eretmochelys imbricata*	Critically Endangered	Critically endangered – the area can potentially be used as a feeding ground
Leatherback	*Dermochelys coriacea*	Vulnerable	Vulnerable – they can potentially use the area as a feeding ground

CARRYING CAPACITY OF BO CHO JUNGLE TRAIL

THE PRODUCT IN BRIEF

The Bo Cho Jungle Trail is a 2,400-metres-long walking trail through mangrove, rubber plantation and jungle in the island of Bo Cho. The trail presents a diversity of landscapes with sections more or less vulnerable to tourism activities. Physically, the trail in some sections is only 1 metre wide, and in other sections it is 2 metres or as little as 30 cm. The calculated area in of the trail used by the visitors is 1.847 m^2.

DAILY CARRYING CAPACITY

Following the computation, the calculated EcCC for the trail is of **34 daily visitors**.

This was calculated considering that a total of 1,198 metres of the trails are at high risk of side-vegetation loss, especially in very narrow sections. These 1,198 metres are spread in different sections of the trail. Some sections can suffer from side-vegetation loss and, therefore, soil erosion and impacts on fauna and flora, as shown in the pictures below.

These sections of the trial are extremely narrow and would be helpful to provide signages and educative/persuasive interpretation (e.g. panels on the trail, verbal) to inform visitors to stay on the trail and avoid negative impacts. This is also needed to keep the trail attractive as it currently is.

In addition, a number of species was included in the computation as identified to be vulnerable to such activity, given the habitat usage and past records. Most species considered in the computation are birds, as they suffer, potentially, the wider impact from the trekking activities. The presence of the Palm Civet was confirmed during the site inspection and it can be considered vulnerable, as it inhabits the jungle sections of the trail. No other mammals were considered in the computation. It seems that the area is not particularly frequented by macaques, so no much pressure was considered on them.

The species considered are listed in the table below:

BIRD SPECIES CONSIDERED IN THE COMPUTATION			
COMMON NAME	SCIENTIFIC NAME	CLASSIFICATION	DETAILS
Green Imperial Pigeon	*Ducula aenea*	Least Concern	Highly present in Bo Cho Island
Greater Coucal	*Centropus sinensis*	Least Concern	Highly present in Bo Cho Island and common in forest habitat
Dollarbird	*Eurystomus orientalis*	Least Concern	Georeferenced in Bo Cho and only in one other location of Lampi
Plain Pouched Hornbill	*Rhyticeros subruficollis*	Vulnerable	Vulnerable – present in Bo Cho
Greater flameback	*Chrysocolaptes guttacristatus*	Least Concern	Highly present in Bo Cho – widely inhabiting forest habitat
Green Broadbill	*Calyptomena viridis Raffles*	Nearly Threatened	Georeferenced only in Bo Cho island – IUCN classification increased the vulnerability of this species
Maroon-breasted Philentoma	*Philentoma velata*	Nearly Threatened	Georeferenced only in Bo Cho island – IUCN classification increased the vulnerability of this species
Olive-backed Sunbird	*Cinnyris jugularis*	Least Concern	Widely present in Bo Cho and georeferenced in the trail area
Plain Flowerpecker	*Dicaeum minullum*	Least Concern	Georeferenced only in Bo Cho island
Asian Glossy Stirling	*Aplonis panayensis*	Least Concern	Georeferenced only in North Bo Cho and South Lampi – usual of forest habitat
Oriental Magpie Robin	*Aplonis panayensis*	Least Concern	Common in Bo Cho's forest habitat of the north island

MAMMALS SPECIES CONSIDERED IN THE COMPUTATION			
Common palm civet	*Paradoxurus hermaphroditus*	Least concern	Common in Bo Cho – also spotted during the field inspections

CARRYING CAPACITY OF HORNBILL WATCHING

THE PRODUCT IN BRIEF

The roosting site is located in Bo Cho Island and the observation is undertaken from min. 200 metres of the roosting site, as per the Management Plan. To ensure high satisfaction, the observation is suggested to not be done from more than 250 metres, thus a watching distance of 200 to 250 meters from the roosting site. The carrying capacity of this activity was calculated on this basis.

Moreover, size and capacity of boats were also considered, and it was suggested that the ideal number of tourists in one boat would be of max. 6 to ensure that the boat is not crowed. The EcCC was calculated also considering that 1 guide (excl. boat driver) is needed in one boat. The total daily accessibility to this activity is of 1 hour (sunset time), therefore the total number of boats/tourists in a day is assumed to fit in this only hour.

The only species that was considered in the computation is the Plain Pouched Hornbill / *Rhyticeros subruficollis,* classified as vulnerable by the IUCN. However, by keeping the advised observation distance, impacts are unlikely to occur. The calculation of the EcCC for this activity resulted in a max. daily capacity of **4 long tailed boats.** By considering visitors' satisfaction, this was translated into a **max. of 24 tourists**, given the fact that boats should not be so crowded. The real limit here is posed on the number of boats.

REPORT THREE

Payment for Ecosystem Services (PES)

Structure for the Ecotourism Activities in Lampi Marine National Park, Myanmar

TABLE OF CONTENTS

INTRODUCTION

This report articulates the PES structure for the ecotourism products discussed in the carrying capacity, plus the Moken Experience that is currently under development. The market prices mentioned in this report are and cannot be definitive but are as close to reality as possible. Market price has to be developed in a participative manner with the community members that are involved as service providers (e.g. how much do the Bo Cho Discovery Leaders expect to earn for one hour of their time to run the village tour?) – same for the benefit sharing mechanism. For instance, it is common to set 10 to 15% out of the profit for the CBT Fund, but this must be discussed with the CBT group and the service provider. Every CBT development has its own dynamics, and these should be understood. Therefore, while the report aims to provide a realistic base, the *structure* in this report is perhaps the most important message.

Based on the results of the EcCC (Ecotourism Carrying Capacity), the report will articulate how each product is likely to benefit a variety of actors within the community. To conclude, a table will be provided for all products with assumed benefit sharing mechanisms that can be adapted to reality as the project develops (e.g. after the development costs and operational costs for each product are clearly articulated, and after these are discussed with TOs and the community members involved). This benefit sharing structure, that is likely to touch different communities in Lampi Marine National Park (LMNP), is embedded within the concept of PES (Payment for Ecosystem Services).

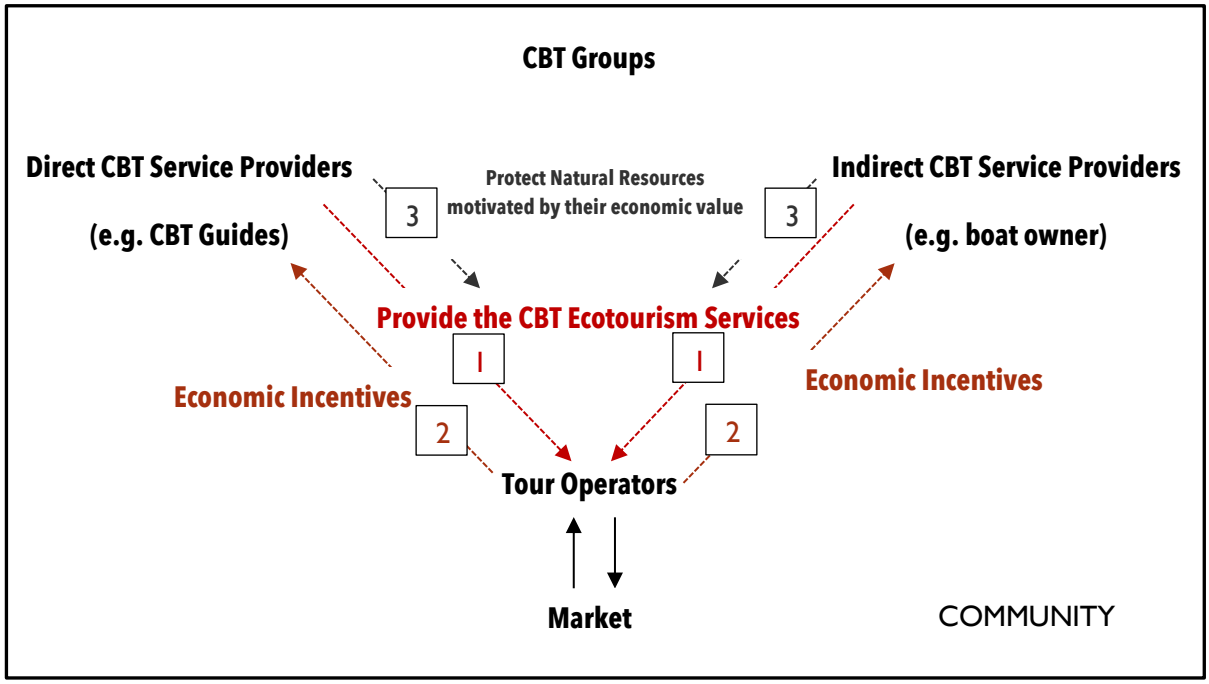
WHY A PES STRUCTURE?

In brief, Payment for Ecosystems Services (or Payment for Environmental Services), here referred as PES, is simply a *market-based* mechanism, similar to subsidies to encourage the conservation of natural resources. This approach recognises the important role that the environment plays in contributing to our wellbeing as well as the potential of market-based approaches to promote conservation. In short, PES are economic incentives to farmers, fisherman and landowners who agreed to take certain actions to manage their land, watersheds etc. In LMNP, these economic incentives are expected to be provided by ecotourism

activities, an approach widely used nowadays in several countries to promote *community-based conservation* of natural resources, especially in protected areas.

At this stage, in the context of LMNP, it is essential to structure this system. The PES should then be discussed with the communities and other stakeholders involved, in order to be fully participative.

The main actors involved in this PES structure are:



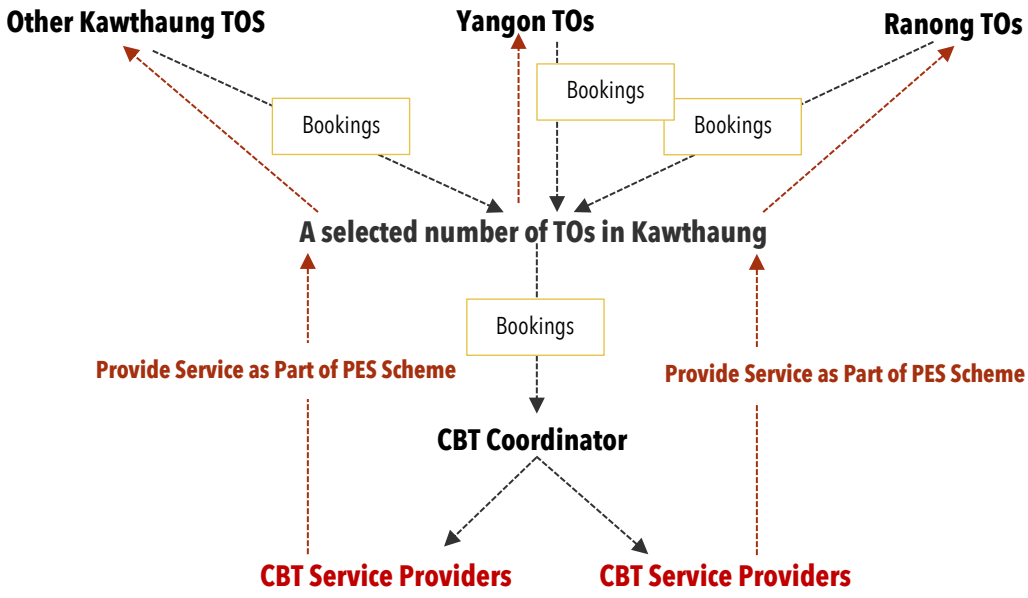
HOW TO READ THIS REPORT

While the PES structure should be supported by a booking system which ensures the market link between the CBT group/s and the TOs, this report, based on the EcCC, only articulates the PES structure at the community level. However, it must be mentioned that the Booking System should be created in a way that it can, with time, function without the support of external organisations.

A SHORT NOTE ON BOOKING SYSTEM

Various Booking System methods can be adopted depending on the market that it is established. For instance, if working with TOs in Yangon and Kawthaung, it is necessary to select a small number of TOs in Kawthaung that are in direct contact with the CBT, as it is very unlikely to create this direct connection between Yangon and the CBT Coordinator in Lampi. It is always better, then, to select a limited number of TOs (e.g. 2-3 or 4) that work with the CBT in Lampi, because this ensures a better coordination of the activities at the CBT level. If I run a tour operator in Yangon and I want to promote the CBT ecotourism packages in Lampi, I may have to get in touch with a selected TO in Kawthaung who has a connection with the CBT in Lampi. Some examples are the CBT in Kayah State (ITC), the one close to Bagan, and in Samkar Lake, as they follow this system. Discussing a booking system at this stage, therefore, is critical for the future functioning of the CBT.

This idea of Booking System is graphically illustrated below:



Moving away from the Booking System, which is not the core focus here, but only a suggestion, we will try to build an ecotourism model at the park level. This report should be read in structural terms rather than detailed numerical economic benefits. As mentioned above, these will be the result of a participative process with the community and discussions with the tour operators interested in the Lampi ecotourism offer.

FUTURE STEPS

Ideally, this report should provide with the needed structure model that can be adjusted while working with the community. Therefore, this is not a definite model, but a model to be used and adapted as the project develops.

To support this process, *mini business plans* can be created, which look at the market and financial aspects of each product, helping the definition of the expected market, the fixed and variable operational costs (even if small MMK amounts), as well as the development costs. It is true that the ecotourism products in question are small-scale, but business plan building exercises can only benefit the development of such products.

As a future step, it is important to open/continue the discussion with the CBT groups/services providers, in order to:

1) Ensure that the all CBT ecotourism products are assigned to a specific group (currently it is unclear who will be responsible for the Sitta Galet Mangrove-Jungle Trail, Kayaking the Crocodile River etc.);

2) Diversify the products by providing at least *2 food-based experiences*. Arranging traditional *family lunches* or supporting existing food stations/restaurants in the villages are two ideas to explore further. Moreover, traditional food, especially lunch with family, is an attractive experience for tourists (also locals, given the diversity of ethnic groups in Myanmar) and for the TOs that will be approached;

3) Evaluate the economic expectations of service providers. These expectations should be discussed, especially when "not realistic" (e.g. too high for the market). However, meeting the expectations of the CBT members is likely to ensure continuation of the activities, motivation and greater involvement;

4) Discuss with the CBT the gradual development of products, starting from those that are surely feasible to develop and launch in the market (here comes the need to meet the TOs and discuss their views on the products that are currently under development or at the idea stage). It is suggested to refrain from stating to the CBT the development of certain products in case it is not sure if they are viable, as this can potentially disappoint the community.

ECOTOURISM PRODUCTS AND CURRENT CBT GROUPS

During the visit to Lampi there was the opportunity to inspect all the products that are expected to be developed. Two CBT groups are currently formed: the Bo Cho Discovery Leaders (*2 currently active members*) and the Moken Groups (*15 currently active members*). Below are the CBT products and the associated groups:

1) Moken Experience – Moken Group from Makyone Galet Village
2) Makyone Galet Village Tour – Bo Cho Discovery Leaders
3) Bo Cho Jungle Trail – not defined yet
4) Kayaking in the Tourist River Mangrove – Moken Group from Makyone Galet
5) Mangrove Walking Tour in the Tourist River – Moken Groups from Makyone Galet
6) Kayaking in the Crocodile River – not defined yet
7) Waterfall Jungle Trekking – not defined yet
8) Sitta Galet Mangrove Jungle Trail – not defined yet
9) Sunset Hornbill Experience in Bo Cho Island – not defined yet
10) Gregories Tour – not defined yet

Some of the products, as they are on the early stage, have not yet been assigned to any group. Here are some suggestions to start associating an existing CBT Group or a potential new group to the products, as a means of identifying the service providers who will be in charge of them.

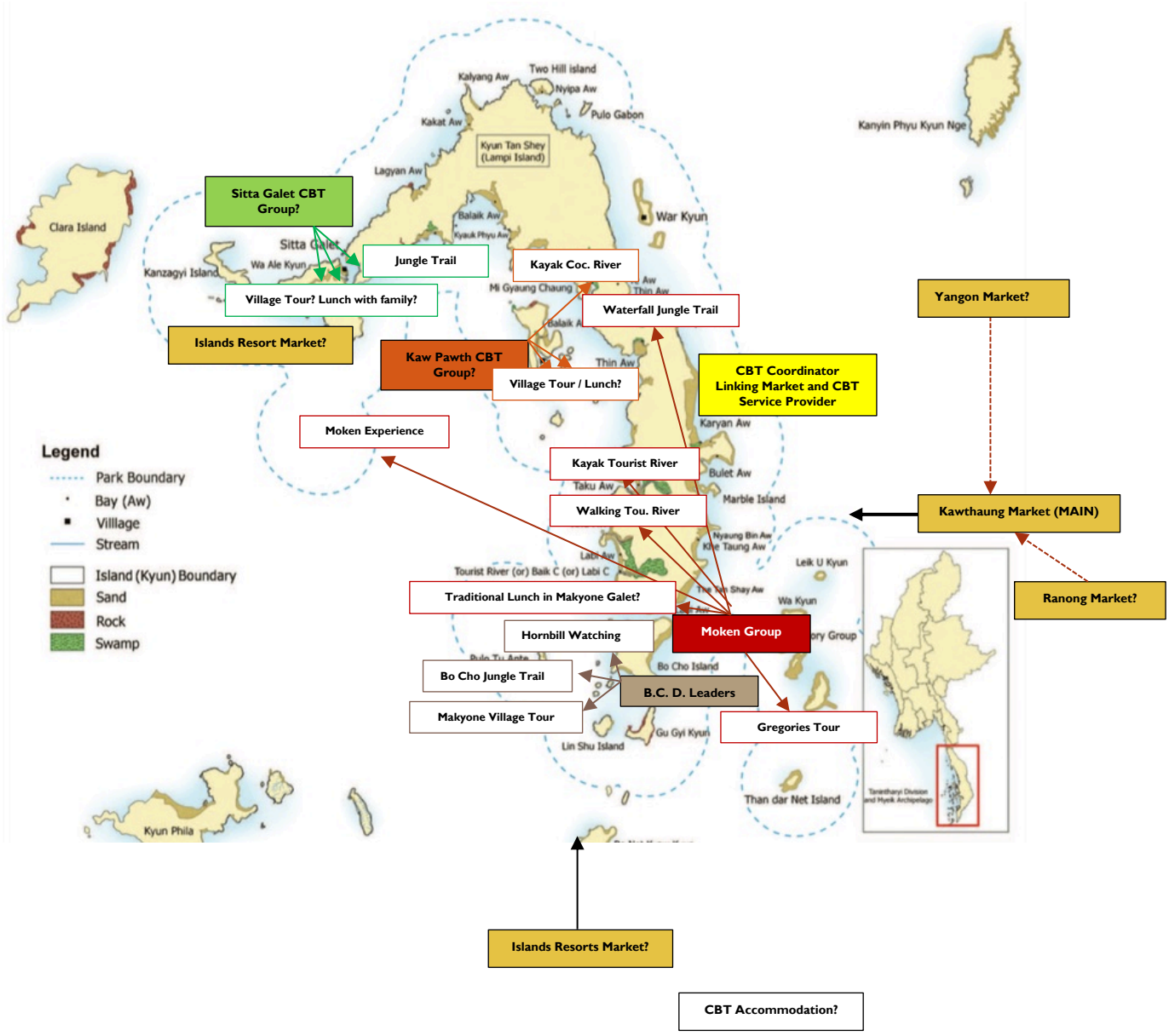
1) The **Bo Cho Jungle Trail** could potentially be run by the Bo Cho Discovery Leaders (2 girls); however, it has been communicated to me that the two girls feel uncomfortable to leave the village to guide the tour inside the jungle. An idea would be to try to involve 3 men from the Burmese community, who, in the context of the village, may be more comfortable to run the tour inside the jungle. According to the carrying capacity, it is *ideal* to have at least 3 people as service providers for this specific product, but even 2 CBT guides specialised in this product would be enough, as they could tour the visitors more than once in a day, if this is the case.

2) **Kayaking the Crocodile River** – this product seems to be involved in the Moken Experience, therefore run by the Moken Groups of Makyone Galet. However, it is still unclear which groups will take care of the activity if it is promoted as a solo experience. It would be good to involve other communities of the park, if this is feasible. Considering the proximity, it could be possible to create a small CBT group in the village of Kaw Pawth and perhaps develop a short village tour with a traditional lunch. Having strategic food-sites helps running the tours.
3) **Waterfall Jungle Trek** – given the location, perhaps this product could be discussed with the Moken Groups of Makyone Galet.
4) **Sitta Galet Mangrove Jungle Trail** – here there is the potential of creating a small CBT group in Sitta Galet as well as organising a village tour and a food experience.
5) **Sunset Hornbill Experience** – given the location, 1 of the 2 groups from Makyone Galet could be involved in this product. I suggest the Discovery Leaders from Bo Cho, if they are willing.
6) **Gregories Tour** – Moken group from Makyone Galet would be the most suitable for this experience.

It is suggested to specify precisely which members of the group are responsible for each product. For instance, if there are 6 Bo Cho Discovery Leaders, 3 of them can be trained for the village tour and 3 of them for the jungle trail. Therefore, 3 CBT guides from Bo Cho Discovery Leaders group will cover a Cultural Guide role and the other 3, a Nature Guide role. The same approach can be applied to the other groups.

SUGGESTED ECOTOURISM MODEL

This model is in accordance to products' potential identified by the organisation as well as food-based product suggestions. The model shows two CBT Groups already formed (Moken Groups and Bo Cho D. Leader) and two suggested groups to be formed in order to better manage all products and spread the benefits. In Report 1, however, it is highlighted the need to prioritise certain products that will enter the market soon. Project duration and community dynamics should help establish the degree of feasibility of this model through prioritisation where it is needed. Report 1 suggests some general packages based on this model.



Expected community involvement based on the suggested ecotourism products and on daily EcCC will be described in the following subsection. It is important to mention, however, that within a group, one guide can be trained for different products if there is shortage of community involvement. It will be shown, then, what each product needs to function based on the maximum daily capacity. It is an indicative of the CBT *Labour Force* needed for each product and how many people can potentially benefit directly from the PES scheme.

MOKEN GROUPS FROM MAKYONE GALET

(Likely to work in rotation – capacity needed based on max. daily visitors)

- Waterfall Trail (2 CBT Nature Guides) + (2 boats drivers)
- Kayaking in the Tourist River (4 CBT Nature Guides) + (2 boat drivers)
- Mangrove Walking in the Tourist River (2 CBT Nature Guides) + (2 boat drivers)
- Gregories Tour with Birdwatching/Snorkelling (3 CBNT Nature Guides) + (3 boat drivers)
- + Moken Experience (3 CBT Cultural Guides) + (1 boat driver)
- + Traditional Lunch in Makyone Galet?

BO CHO DISCOVERY LEADERS

(Likely to work in rotation – capacity needed based on max. daily visitors)

- Bo Cho Jungle Trail (3 CBT Nature Guides)
- Village Tour in Makyone Galet (3 CBT Cultural Guides)
- Hornbill Watching (4 CBT Nature Guides) + (2 boats drivers or more)

SITTA GALET GROUP (NOT FORMED)

(Likely to work in rotation – capacity needed based on max. daily visitors)

- Sitta Galet Jungle Trail (3 CBT Nature Guides)
- + Traditional Lunch? + Village Tour?

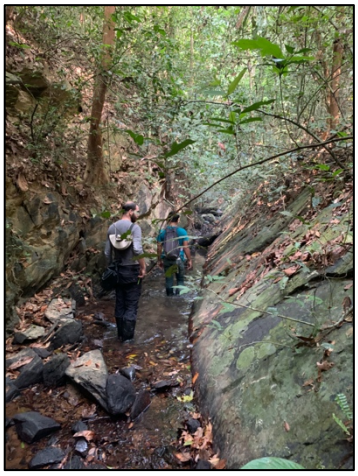
KAW PAWTH GROUP (NOT FORMED)

(Likely to work in rotation – capacity needed based on max daily possible visitors)

- Kayaking in the Crocodile River (4 CBT Nature Guides) + (2 boat drivers)
- + Traditional Lunch? Village Tour?

PES – WATERFALL JUNGLE TRAIL

The Waterfall Jungle Trail is located in the eastern part of Lampi Island. Following the computation of the EcCC, it is estimated that the acceptable maximum number of daily visitors is 24. Given the fact that this is a long trail and one CBT can potentially run the tour only once a day, it is estimated that the needed



management capacity of this trail is of at least 2 CBT guides that need to be trained for this specific product. Therefore, the trekking has the potential of benefiting directly 2 individuals that act as service providers. They work in rotation or based on availability.

At this stage, the estimated market price per visitor could be set to 25.000 MMK for the 2.5 hours *experience* (tour packages prices should be formed based on development/operational costs and CBT expectation, and through discussions with TOs). At this stage, it can be estimated about 200.000 MMK of development costs related to trail signages (covered initially by the supporting org., but by the CBT in the long-term). Here, it is assumed that the life span of signages is approximately 3 years. Other development expenses related to trail maintenance are not considered, as this can be done by the CBT.

Operational costs include the depreciation of the development costs (it is important to forecast visitors' numbers to how much to depreciate) and the boat hire. Benefits are then shared between the service providers and the CBT Fund, in addition to a contribution to the park management.

To depreciate the development costs, it is essential to estimate the life span of the depreciated equipment and to forecast how many tours/activities are expected to be run during the tourist season. Here, we estimate a 5-months tourist season. We can also estimate 2 Waterfall Jungle Trail tours in a week (a business plan would give a more trustable forecast). The life span of the signages to depreciate is set at 3 years as an example, according to how long they can last. Sometimes, equipment has different life spans, and these should be taken into consideration.

Depreciation of the development costs in order to ensure CBT financial empowerment:

	Amount	Months
Total amount to depreciate	200.000 MMK	
Life span in months (3 years)		36
Active tourist months (3 years)		15
Estimated n. of Waterfall Tours in 15 months (2 per week)		120
Total amount to depreciate from each tour (as a cost for each sold activity – money to put aside from each tour sold)	1.600 MMK	

The depreciation can either be kept by the CBT group as a separate fund or included in the CBT Fund. I suggest a separate fund, as the depreciation fund is very important for the long-term ongoing activities. For instance, the Moken Group can gather the depreciation of each activity, keep the money in one depreciation fund and use this money for any of the activities. Simply, if the Moken Group runs 3 ecotourism activities, it will not have 3 depreciation funds, but only one and use the money for the product that needs it first.

The PES system for this product is broken down by including the benefit sharing based on 4 paying visitors (which I assume to be the break-even). Benefit sharing in % can vary from product to product and should be discussed with the CBT groups in detail. Moreover, a salary-base system should be set for one CBT coordinator. Ideally, 1 CBT coordinator is enough to coordinate the whole destination (after appropriate IT and other trainings). Is her/him to be in contact with the TOs. A fixed amount should be set for this person, therefore, to ensure long-term commitment, and also because this will be a full-time position during high season. A contribution should come from each product, based on estimated sold tours (according to the business plan).

This should be considered a fixed operational cost. As I do not know how much the CBT coordinator will cost monthly for the entire park, I assume, based on past experience, that at least 300.000 MMK monthly during the tourist season (approximately 5 months a year). These 300.000 MMK monthly should be covered by the contribution from each product sold. At the moment, 10 products are listed, and we can assume that 30.000 MMK monthly from each product sold need to be channelled into the salary of the CBT Coordinator (this is the most important person of the CBT, marketwise). Again, a business plan would give trustable

forecasting and inform how much should be put aside from each activity in order to have the needed amount as a collective contribution to the salary of the CBT Coordinator. Here, for the Waterfall Trail, we assume that at least 2 tours per week during the 5 months of high season are run. Of course, if more products will be developed (e.g. lunch with family), the contribution for each activity will be lower, or higher if products are less than 10.

	IN	OUT
Visitors (Break-Even) or 1 – 2 – 3 tourists paying the equal to Break-Even	4	
Income	100.000 MMK	
OPERATIONAL COSTS		
Boat (Inc. Fuel and Driver)		60.000 MMK
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		1.600 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		3.750 MMK
Refreshment provided on boat (e.g. water, juice) (est. 1.000 MMK per person)		4.000 MMK
PROFIT	29.400 MMK	
BENEFIT SHARING AS PART OF PES		
Service Provider (1 CBT guide) (70%)	20.580 MMK	
CBT Fund (25%)	7.350 MMK	
Contribution to Park Man. (5%)	1.470 MMK	

In rotation, two CBT guides are likely to benefit from this product. Moreover, this could also become a regular revenue for a selected number of boat drivers. In this case, it is fair that the service provider is substantially rewarded for the time and effort invested in this trekking, which is quite challenging. In my opinion, 25.000 MMK is a fair price for one tourist. Given this possible market price (to be discussed with TOs and to see how it matches with the total prices of packages), the possible costs and the earning amount that may be expected by the CBT guides, it would suitable to establish a minimum number of participants to 4 in order to meet the break-even. However, the minimum number of tourists should be reviewed following a breakdown of real development and operational costs.

To summarise, the beneficiaries from this product as part of the PES scheme are:

- At least 2 CBT guides working in rotation;
- At least 2 boat drivers and owner/s regularly involved in this activity.

The benefit for the CBT increases as the number of visitors in a group increases, as they are rewarded on a % basis. Instead, the boat drivers (which ideally own the boat as well) are paid on a fixed amount basis.

Indirect beneficiaries:

- Makyone Galet community
- Fuel providers
- CBT Coordinator
- Provider of refreshments (e.g. water, traditional juice) from Makyone Galet community

A NOTE ON FINANCIAL RECORDING

The CBT group should be able to record all entrances and costs, as well as benefit sharing. Simple *financial recoding sheets* can be prepared, and trainings on financial administration can be provided. Although 1 or 2 treasures or CBT accountant are likely to be responsible for this task, it is useful that the whole CBT group is aware of the financial recording mechanism to ensure transparency.

A NOTE ON CBT FUND

The CBT Fund is managed by the CBT group in charge of a certain number of ecotourism activities. The fund is useful to deliver benefits behind the service providers. However, the CBT fund should be used for two main reasons:

1) Contribute to costs related to the general management of the CBT (e.g. adm.);
2) Support local social and environmental work.

The CBT will inevitably have administrative expenses for which money is needed, as communication and travel. The CBT fund can also be used for supporting community development activities: scholarships, welfare of elders, village infrastructures etc. The CBT Group/Committee can propose how these funds could be used and discuss with the community.

A NOTE ON PARK FUND

The 5% contribution to the Park was decided on the basis of:

1) Conversation with the staff in loco;
2) Extent to which it can provide a reasonable contribution to the Park.

The contribution can be used for covering essential expenses that may be related to key infrastructure of the park for tourism and beyond. For instance, with the time it could cover equipment replacement, conservation work, sponsor basic amenities of the park. It should therefore, support what is not expected to be supported by the CBT Fund or Depreciation Fund in order to work towards the ideal situation where ecotourism activities do contribute **directly** to the conservation of the park.

The Management of this Fund should be of a neutral entity (that is not involved in the tourism activities) – thus, it may be suggested to explore the idea of having the Park Management Committee managing the Fund. But, of course, a transparent system should be in place. A system that is transparent for the CBTs as well.

PES – SITTA GALET MANGROVE-JUNGLE TRAIL

The Sitta Galet Mangrove-Jungle Trail is located in the northwest of Lampi Island, in front of Sitta Galet Village. Following the computation of the EcCC, it is estimated that the acceptable maximum number of daily visitors is 37. Consequently, it is suggested at least 3 CBT Nature Guides to be involved in rotation. It is also recommended that these CBT guides are part of a *new group based in Sitta Galet*. Therefore, the trail has the potential of benefiting directly at least 3 individuals that act as service providers. They work in rotation or based on availability.

At this stage, the estimated market price per visitor could be set to 12.000 MMK for the 1-hour

experience (tour packages prices should be formed based on the individual product price and after discussions with TOs). For instance, in the case of a half-day tour including this trail plus Sitta Galet Village Tour, we should firstly consider each product separately, in terms of costs, profit and benefit sharing – as we are doing now while building the PES model. Operational costs include the depreciation of the development costs (it is important to forecast visitors' numbers to how much to depreciate) and it is suggested to include boat coats, if this will be part of half-day tour. Benefits are then shared among the service providers, the CBT Fund and the park management.

Here, we estimate a 5-months tourist season and 3 tours in a week (more than the Waterfall Trail, as this is better located and has more market accessibility – since a collaboration could be established with the nearby W.R.). The life span of the equipment to depreciate is set at 3 years as an example, according to how long the trail signages can last. Here, the amount to depreciate is estimated at 150.000 MMK because it is a short trail and any development, such as signages, is expected to cost less than in the Waterfall Trail. The community should be, in the long-term, responsible for paying any replacement/fixing of the signages, and the depreciation fund becomes critical to ensure financial empowerment of the CBT.

Depreciation of the development costs in order to ensure CBT financial empowerment:

	Amount	Months
Total amount to depreciate	150.000 MMK	
Life span in months (3 years)		36
Active tourist months (3 years)		15
Estimated n. of Sitta Jungle Tours in 15 months (est. 3 per week)		180
Total amount to depreciate (money to put as a cost for each sold activity - money to put aside from each tour sold)	850 MMK	

For the Sitta Galet Jungle Trail, we assume at least 3 tours running per week during the 5 months of high season. In accordance to the individual price suggested, the product can be offered also to only one visitor, as this, based on a 12.000 MMK received by the CBT, can provide an excellent profit for the service provider. In case the product in Sitta Galet is included in a half-day (or longer) package tour, costs related to boat may need to be spread to all products taking place in the area. For instance, a half-day tour from the

nearby resort may involve the Sitta Galet Jungle Trail and Village Tour. The boat cost should be added to the individual cost calculated for each product in order to form the package cost for each tourist.

For other products, such as the Tourist River, Gregories and Hornbill Watching, the estimated boat costs (see later in the report) are already included, as these products can also be promoted as solo experiences or they are likely to have high boat costs. Therefore, calculating them in this report gives an idea of the possible market price for each of these activities.

In packages tours, one boat might be involved in different products (e.g. from Bo Cho to Tourist River and then Sitta Galet). For this reason, its costs should be spread to 2 or more ecotourism activities involved in the tour.

Here is the potential breakdown of the Sitta Galet Jungle Tour:

	IN	OUT
Visitors	1	
Income	12.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		850 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		2.500 MMK
PROFIT	8.650 MMK	
BENEFIT SHARING AS PART OF PES		
Service Provider (1 CBT guide) (80%)	6.900 MMK	
CBT Fund (15%)	1.300 MMK	
Contribution to Park Man. (5%)	430 MMK	

To summarise, the beneficiaries from this product as part of the PES scheme are:

1. At least 3 CBT guides working in rotation for the village of Sitta Galet

Indirect beneficiaries:

2. Sitta Galet Community
3. CBT Coordinator

PES – KAYAKING THE CROCODILE RIVER

The Crocodile River Trail is located in the west of Lampi Island. Following the computation of the EcCC, it is estimated that the acceptable maximum number of daily visitors is 30. According to the need of having at least 1 guide per 3 kayaks (due to long-tailed boat capacity in transporting the kayaks), it can be assumed that this CBT product has the potential to benefit 5 CBT guides, working in rotation, and at least to 2 boat drivers that can be involved in the product. This product can also include a new CBT Group from the village of Kaw Pawth (if feasible), in addition of potentially being part of the 2-days Moken Experience, which is run by the Moken Group of Makyone Village. Therefore, the trail has the potential of benefiting directly at least 7 individuals that act as service providers. They work in rotation or based on availability.

At this stage, the estimated market price per visitor to participate in the 1-hour mangrove kayaking tour could be assumed to be about 18.000 MMK for each participant. According to an estimated total capacity of 6 people per boat/per 1 guide, this amounts to maximum 108.000 MMK per tour. Here, it is important to consider the development costs (e.g. price of kayaks). For each activity sold, a contribution to the depreciation of the development costs should be made.

It is possible to estimate:

1. 3 kayaks – life span of 3 years (maybe more?). Each costs 300.000 MMK (depending on the quality or if traditional canoes will be used instead). Possibly it will be necessary to add life jackets, life ring or any other equipment – for each equipment, different life spans can be calculated.
2. Active tourist season – in 3 years: 15 months.
3. Expected weekly tours sold in 5 months within the tourist season – 3 tours weekly = (12 monthly).

Depreciation of the development costs in order to ensure CBT financial empowerment:

	Amount	Months
Total amount to depreciate	900.000 MMK	
Life span in months (3 years)		36
Active tourist months (3 years)		15
Estimated n. of kayaking activities in 15 months (est. 3 per week)		180
Total amount to depreciate – to put aside from each tour sold (as a cost for each sold activity)	5.000 MMK	

It is possible to assume at least 3 tours per week during the 5 months of high season. We can estimate a total of 25.000 MMK boat costs per tour, assuming that it will be developed from Kaw Pawth Village (increase boat price if tour is sold from Makyone Galet and increase individual price if needed). Therefore, a break-even related to the visitors' number needs to be set *or* the product can be proposed to only one person, given the fact that that she/he will pay a fixed cost to meet the break-even.

Here, we will set a break-even:

	IN	OUT
Visitors (break-even) or 1 – 2 visitors paying equal to break-even	3	
Income	54.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		5.000 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		2.500 MMK
Boat costs (Inc. fuel) (assuming from Kaw Pawth)		25.000 MMK
Refreshment on boat (e.g. water) (est. 1.000 per person)		3.000 MMK
PROFIT	18.500 MMK	
BENEFIT SHARING AS PART OF PES		
Service provider (1 CBT guide) (70%)	12.950 MMK	
CBT Fund (25%)	4.600 MMK	
Contribution to park man. (5%)	900 MMK	

In rotation, 3 CBT guides are likely to benefit from this product. Moreover, this could also become a regular revenue for a selected number of boat drivers.

To summarise, the likely beneficiaries from this product as part of the PES scheme are:

1. At least 5 CBT guides working in rotation for the village of Kaw Pawth
2. At least 2 boat drivers and owner regularly involved in this activity

Indirect beneficiaries:

3. Kaw Pawth Community?
4. Fuel providers
5. CBT Coordinator
6. Providers of refreshments from Kaw Pawth Village?

PES – KAYAKING THE TOURIST RIVER

The Tourist River Trail is located in the west of Lampi Island. Following the computation of the EcCC, it is estimated that the acceptable maximum number of daily visitors is 20. According to the need of having at least 1 guide per 3 kayaks (due to long-tailed boat capacity to transport the kayaks), it can be assumed that this CBT product has the potential to benefit 4 CBT guides, working in rotation, and at least 2 boat drivers that can be involved in the product. This product is likely to be managed by the Moken Group from Makyone Galet. Therefore, we can assume that there is a need to provide different equipment than the Crocodile River (assuming that the kayaks at the Crocodile River are not run by the Moken Groups but by a potential new group in Kaw Pawth). Therefore, the trail has the potential of benefiting directly at least 6 individuals that act as service providers. They work in rotation or based on availability.

At this stage, the estimated market price per visitor to participate in 1-or 1 ½ hour mangrove kayaking tour can be assumed to be about 25.000 MMK for each participant. According to an estimated total

capacity of 6 people per boat/per 1 guide, this amounts to maximum 150.000 MMK per tour. A higher price than the Crocodile River is suggested because this experience is longer and far more enriching.

Here, it is important to consider the development cost (e.g. price of kayaks). For each activity sold, a contribution to the depreciation of the development costs should be made.

We can estimate:

1. 3 kayaks – life span of 3 years – each costs 300.000 MMK (traditional canoes?)
2. Active tourist season – in 2 years: 15 months
3. Expected weekly tours sold in the months within the tourist season – 4 = (16 monthly)

This is likely to be a more popular activity in the CBT. Therefore, for now, 4 weekly tours are expected, but this number can be adjusted with time.

Depreciation of the development costs in order to ensure CBT financial empowerment:

	Amount	Months
Total amount to depreciate	900.000 MMK	
Life span in months (3 years)		36
Active tourist months (3 years)		15
Estimated n. of Tourist River Kay. Tours in 15 months (est. 4 per week)		240
Total amount to depreciate (as a cost for each sold activity)	3.750 MMK	

It is assumed at least 4 tours per week during the 5 months of high season. We can estimate a total of 40.000 MMK boat costs per tour, as this site is much more accessible and requires less fuel and time.

	IN	OUT
Visitors (break-even) or 1 or 2 paying the break-even	3	
Income	75.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		3.750 MMK

Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		1.800 MMK
Boat costs (Inc. fuel)		40.000 MMK
Refreshment on boat (e.g. water) (est. 1.000 per person)		3.000 MMK
PROFIT	26.450 MMK	
BENEFIT SHARING AS PART OF PES		
Service provider (1 CBT guide) (60%)	15.900 MMK	
CBT Fund (35%)	9.250 MMK	
Contribution to park man. (5%)	1.300 MMK	

In rotation, 4 CBT guides are likely to benefit from this product. Moreover, this could also become a regular revenue for a selected number of boat drivers.

To summarise, the beneficiaries from this product as part of the PES scheme are:

1. At least 4 CBT guides working in rotation for Makyone Galet Village
2. At least 2 boat drivers and owner regularly involved in this activity

Indirect beneficiaries:

3. Makyone Galet
4. Fuel providers
5. CBT Coordinator
6. Provider of refreshment from Makyone Galet Community

PES – WALKING TOUR AT THE TOURIST RIVER

The Tourist River offers the opportunity of an additional product, the walking tour through the mangrove. Following the computation of the EcCC, it is estimated that the acceptable maximum number of daily visitors is 30. It is expected that this product is managed by the Moken Group from Makyone Galet. According to the carrying capacity, at least 2 CBT guides should be trained for this product, running this experience only during the low tide. In addition to the boat driver/owner, it has the potential to benefit a total of 4 people from the community as part of the PES scheme. At this stage, the estimated market price per visitor to participate in 1 or 1 ½ hours mangrove tours is of about 22.000 MMK per participant.

Here, we can estimate:

1. Equipment (e.g. walking boots for mangroves etc.) – lifespan of 2 years – appx. 200.000 MMK
2. Active tourist season – in 2 years: 10 months
3. Expected weekly tours sold in the months within the tourist season – 4 = (16 monthly)

Depreciation of the development costs in order to ensure CBT financial empowerment:

	Amount	Months
Total amount to depreciate	200.000 MMK	
Life span in months (2 years)		24
Active tourist months (2 years)		10
Estimated n. mangrove tours in 15 months (est. 3 per week)		160
Total amount to depreciate (as a cost for each sold activity)	1.250 MMK	

It is assumed at least 4 tours per week during the 5 months of high season. We can estimate a total of 40.000 MMK boat costs per tour.

	IN	OUT
Visitors (break-even) or 1 – 2 visitors paying equal to break-even	3	
Income	66.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		1.250 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		1.900 MMK
Boat costs (Inc. fuel)		40.000 MMK
Refreshment on boat (e.g. water) (est. 1.000 per person)		3.000 MMK
PROFIT	19.850 MMK	
BENEFIT SHARING AS PART OF PES		
Service provider (1 CBT guide) (75%)	14.900 MMK	
CBT Fund (20%)	4.000 MMK	
Contribution to Park Man. (5%)	1.000 MMK	

In rotation, 2 CBT guides are likely to benefit from this product. Moreover, this could also become a regular revenue for a selected number of boat drivers.

To summarise, the likely beneficiaries from this product as part of the PES scheme are:

1. At least 2 CBT guides working in rotation for Makyone Galet Village
2. At least 2 boat drivers and owner regularly involved in this activity

Indirect beneficiaries:

3. Makyone Galet Village Community
4. Fuel providers
5. CBT Coordinator
6. Providers of refreshments from Makyone Galet Village

PES – SNORKELLING THE GREGORIES

Following the computation of the EcCC for the Gregories Tour based on the snorkelling activities, it is suggested a maximum of 30 daily visitors in the site (each day in a different area tract). It is suggested that these 30 visitors are split into 3 or more groups, therefore without exceeding 10 Pax/boat in order to enrich the experience and safety. A total of 4 CBT guides can be trained for this product in order to always have availability, as this product has the potential of being highly successful. Moreover, 4 boat drivers can be involved in the activities in rotation, to maximise the spreading of the benefits (at least 2 boat drivers should be involved). For an afternoon tour, that includes on-board island hopping, snorkelling and flying foxes watching over the sunset (4-hours tour), a market price of about 45.000 MMK per participant could be established. The experience is diverse, rich and unique; therefore this price is appropriate to the experience (and perhaps even more).

Here, we can estimate:

1. Equipment (e.g. snorkelling, birdwatching equipment etc.) – lifespan of 3 years: appx. 1.500.000 MMK (just estimation)
2. Active tourist season – in 3 years: 15 months
3. Expected weekly tours sold in the months within the tourist season – (4 weekly) = (16 monthly)

Consider estimating the depreciation separately if equipment are expected to have a different life span.

Depreciation of the development costs in order to ensure CBT financial empowerment:

	Amount	Months
Total amount to depreciate	1.500.000 MMK	
Life span in months (3 years)		36

Active tourist months (3 years)		15
Estimated n. of Tours at the Gregories in 15 months (est. 3 per week)		240
Total amount to depreciate (as a cost for each sold activity)	6.250 MMK	

It is assumed at least 4 tours per week during the 5 months of high season. We can estimate a total of 100.000 MMK boat costs per tour.

	IN	OUT
Visitors (break-even) or 1 – 2 visitors paying equal to break-even	3	
Income	135.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		6.250 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		1.900 MMK
Boat costs (Inc. fuel)		100.000 MMK
Refreshment on boat (est. 1.000 per person)		3.000 MMK
PROFIT	23.850 MMK	
BENEFIT SHARING AS PART OF PES		
Service provider (1 CBT guide) (70%)	16.700 MMK	
CBT Fund (25%)	6.000 MMK	
Contribution to park man. (5%)	1.200 MMK	

In rotation, at least 3 CBT guides are likely to benefit from this product. Moreover, this could also become a regular revenue for a selected number of boat drivers.

<u>To summarise, the likely beneficiaries from this product as part of the PES scheme are:</u>

1. At least 3 CBT guides working in rotation for Makyone Galet Village
2. At least 3 boat drivers and owner regularly involved in this activity

<u>Indirect beneficiaries:</u>

3. Makyone Galet Village Community
4. Fuel providers
5. CBT Coordinator

6. Providers of refreshments from Makyone Galet Village

PES – BO CHO JUNGLE TRAIL

The Bo Cho Jungle Trail is located in Bo Cho Island, and it is still not defined which group will manage this product. This report suggests that the Bo Cho Discovery Leader group is suitable for managing the experience, by involving at least 3 CBT guides (men) willing to join the group. Three CBT guides are needed given that the maximum EcCC was calculated to be 34 visitors in a day.

At this stage, the estimated market price per visitor could be set to 15.000 MMK per 1 ½ hours trail (the rubber workshop involvement should be considered and established as an operational cost if it is the case). Easily accessible, it is possible to forecast that this tour may be run at least 4 times in a week during the tourist season. Development costs include signages (every 3 years) and yearly trail maintenance – this is considered a cost because it may involve considerable work following the raining season. Maintenance can be accounted to 200.000 MMK a year, including cleaning the path, re-vegetation etc., while signage can be amounted to 150.000 every 3 years.

Note: the trail maintenance was not considered for other hiking trails because these take place in rocky riverbeds that hardly will need specific maintenance, while in Bo Cho the trail is usually very narrow and very sensitive to trampling.

Depreciation of the development costs in order to ensure CBT financial empowerment:

Yearly Trail Maintenance	Amount	Months
Total amount to depreciate	200.000 MMK	
Life span in months (1 year)		12
Active tourist months (1 year)		5

Estimated n. of Bo Cho Jungle Tours in 5 months (4 per week)		80
Total amount to depreciate (as a cost for each sold activity)	2.500 MMK	

Signages	Amount	Months
Total amount to depreciate	150.000 MMK	
Life span in months (3 year)		36
Active tourist months (3 year)		15
Estimated n. of Bo Cho Jungle Tours in 15 months (4 per week)		240
Total amount to depreciate (as a cost for each sold activity)	600 MMK	

The total depreciation of each run activity is 3.100 MMK.

The benefit sharing is broken-down as follows:

	IN	OUT
Visitors (e.g. break-even)	1	
Income	15.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		3.100 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		1.875 MMK
PROFIT	10.000 MMK	
BENEFIT SHARING AS PART OF PES		
Service Provider (1 CBT guide) (75%)	7.500 MMK	
CBT Fund (20%)	2.000 MMK	
Contribution to park manag. (5%)	500 MMK	

In rotation, 3 CBT guides are likely to benefit from this product.

To summarise, the likely beneficiaries from this product as part of the PES scheme are:

1. At least 3 CBT guides working in rotation from the Discovery Leaders Group of Makyone Galet

The benefit for the CBT increases as the number of visitors in a group also increases, as they are rewarded on a % basis.

Indirect beneficiaries:

2. Makyone Galet Community
3. CBT Coordinator

It is suggested to add a boat pickup from the beach back to the village. In this case, 1 boat driver can actively be involved, and the individual price for the experience can be increased.

PES – MAKYONE GALET VILLAGE TOUR

In the Village Tour run by the Bo Cho Discovery Leaders group of Makyone Galet, at least 3 CBT guides should be involved in rotation. The current price is 10.000 MMK per visitor, and a minimum of 4 tours in a week is expected (likely to be more, but it is suggested to slightly underestimate the real expectation).

	IN	OUT
Visitors (e.g. break-even)	1	
Income	10.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		/
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		1.875 MMK
PROFIT	8.125 MMK	
BENEFIT SHARING AS PART OF PES		
Service provider (1 CBT guide) (75%)	6.100 MMK	
CBT Fund (20%)	1.625 MMK	
Contribution to park man. (5%)	400 MMK	

In rotation, 3 CBT guides are likely to benefit from this product.

The likely beneficiaries from this product as part of the PES scheme are:

1. At least 3 CBT guides working in rotation form the Discovery Leaders group of Makyone Galet

Indirect beneficiaries:

2. Makyone Galet Community
3. CBT Coordinator

PES – HORNBILL WATCHING IN BO CHO ISLAND

Hornbill watching in Bo Cho is suggested to be run by the Bo Cho Discovery Leaders group if they are willing to spread the benefits more widely. According to the EcCC, 4 CBT guides can be trained to run this product. 4 boats can also be considered, with a maximum of 6 Pax per boat to ensure visitors' satisfaction. This experience can only be run during sunset.

At this stage, the estimated market price per visitor could be set to 15.000 for 1-hour experience, and 4 tours a week can be expected. Development costs may include birdwatching equipment (800.000 MMK – lifespan of about 3 years) and operational costs may include boat (20.000 MMK) and refreshments (1.000 MMK per person).

Depreciation of the development costs in order to ensure CBT financial empowerment:

	Amount	Months
Total amount to depreciate	800.000 MMK	
Life span in months (3 year)		36
Active tourist months (3 year)		15
Estimated tours (4 per week)		240
Total amount to depreciate (as a cost for each sold activity)	3.350 MMK	

	IN	OUT
Visitors (e.g. break-even) 1 or 2 visitors paying the break-even	3	
Income	45.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		3.350 MMK
Boat (Inc. fuel)		20.000 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		1.875 MMK
Refreshments (1.000 MMK per person)		3.000 MMK
PROFIT	16.775 MMK	
BENEFIT SHARING AS PART OF PES		
Service Provider (1 CBT guide) (60%)	10.000 MMK	
CBT Fund (35%)	5.900 MMK	
Contribution to park man. (5%)	800 MMK	

In rotation, 4 CBT guides are likely to benefit from this product.

To summarise, the likely beneficiaries from this product as part of the PES scheme are:

1. At least 4 CBT guides working in rotation from the Discovery Leaders Group of Makyone Galet
2. A number of boat drivers (e.g. 2)

Indirect beneficiaries:

3. Makyone Galet Community
4. CBT Coordinator
5. Refreshment providers from Makyone Galet Village

PES – MOKEN EXPERIENCE (4-HOURS TOUR)

The Moken Experience is a 4-hours tour showcasing and involving participants in the Moken fishing and cooking. During a meeting, the cost for this experience was broken-down as follows:

6. Boat total of 230.000 MMK

Development costs include fishing, cooking and lunch traditional equipment: estimated to 150.000 MMK with a 2-years life span. In addition to the boat driver, 1 CBT guide should be on board for the experience.

There is a full capacity of 5 visitors, with possible individual price set to 55.000 MMK. We can assume that this tour may take place 3 times a week during the tourist season.

	Amount	Months
Total amount to depreciate	150.000 MMK	
Life span in months (2 year)		24
Active tourist months (2 year)		10
Estimated tours (3 per week)		120
Total amount to depreciate (as a cost for each sold activity)	1.250 MMK	

	IN	OUT
Visitors (e.g. Break-Even) 1 or 2 visitors paying the break-even	5	
Income	275.000 MMK	
OPERATIONAL COSTS		
Depreciation of the development cost (managed by the CBT group separately from the CBT Fund)		1.250 MMK
Boat (Inc. fuel)		230.000 MMK
Contribution to CBT Coordinator Salary (managed by the CBT group separately from the CBT Fund) (based on expected monthly tours and assumed salary)		2.500 MMK
Refreshments (1.000 MMK per person)		5000 MMK
PROFIT	36.250 MMK	
BENEFIT SHARING AS PART OF PES		

Service provider (1 CBT guide) (70%)	25.400 MMK	
CBT Fund (25%)	9.100 MMK	
Contribution to park man. (5%)	1.800 MMK	

Synthesis Indicative Table

Product	Daily Max CC	Seasonal Max CC [1]	Estimated Seasonal Visitors / Seasonal Break-Even of tourist N. (B/E) [2]	Expected Seasonal Total **Income** [3]	Expected Seasonal Total **Profit** [4]	Expected Total Seasonal Contribution to **CBT Fund** [5]	Expected Total Seasonal Contribution to **Park Fund**	Expected Total Seasonal Contribution to **Service Provider/s** [6]	Expected Seasonal Contribution to **other providers** (e.g. fuel, boat driver, drinks etc.) [7]
Waterfall Jungle Trek	27	3,402	144	**3,600,000** (expected 2 weekly tours) – break-even is 100,000 MMK per tour	1,058,400	**264,600**	**52,920**	**740,880**	2,304,000
Sitta Galet Mangrove – Jungle Trail	37	4,662	54 (B/E) 108 (estimated)	**1,296,000** (expected 3 weekly tours) – break-even is 12,000 MMK per tour – but I calculated an average of 2 visitors per tour	934,200	**140,400**	**46,440**	**745,200**	/
Kayaking Crocodile River	30	3,780	162	**2,916,000** (expected 3 weekly tours) – break-even is 54,000 MMK per tour	999,000	**248,400**	**48,600**	**699,300**	1,512.000
Kayaking Tourist River	20	2,520	216	**5,400,000** (expected 4 weekly tours) – break-even is 75,000 MMK per tour	1,904,400	**666,000**	**93,600**	**1,144,800**	3,096,000
Walking Tour – Tourist River	30	3,780	216	**4,752,000** (expected 4 weekly tours) – break-even is 66,000 MMK per tour	1,429,200	**288,000**	**72,000**	**1,072,800**	3,096,000
Snorkelling at Gregories	30	3,780	216	**9,720,000** (expected 4 weekly tours) – break-even is 135,000 MMK per tour	1,717,200	**432,000**	**86,400**	**1,202,400**	7,416,000
Bo Cho Jungle Trail	34	4,284	72 (B/E) 144 (estimated)	**2,160,000** (expected 4 weekly tours) – break-even is 15,000 MMK per tour – but I calculated an average of 2 visitors per tour	1,440,000	**576,000**	**72,000**	**1,080,000**	/
Makyone Galet Village Tour	/	/	72 (B/E) 144 (estimated)	**1,440,000** (expected 4 weekly tours) – break-even is 10,000 MMK per tour – but I calculated an average of 2 visitors per tour	1,170,000	**234,000**	**57,600**	**878,400**	/
Bo Cho Hornbill Watching	24	3,024	216	**3,240,000** (expected 4 weekly tours) – break-even is 45,000 MMK per tour	1,207,800	**424,800**	**57,600**	**720,000**	1,656,000
Moken Experience	/	/	270	**14,850,000** (expected 3 weekly tours) – break-even is 275,000 MMK per tour	1,957,500	**491,400**	**97,200**	**1,371,600**	12,690,000
Total	/	/	/	**49,374,000**	**13,817,700**	**3,765,600**	**684,360**	**9,655,380**	**31,770,000**

Synthesis Indicative Table

Points to note

Currency MMK

Figures can be higher as most calculations were undertaken using the break-even as a reference point and expected numbers of tours. The table aims to show **the realistic and most likely achievable scenario** as it is highly unlikely to that the market constantly matches with the max CC figure of each product. For instance, even if 3.402 people may be allowed in the waterfall trail in one season, this number is still too high to be feasible. Therefore, while we need a max CC figure, our calculation of the seasonal potential benefits should be realistic but by keeping in mind that the figure may be higher, **but still within the limit of the CC**. This approach was used in the PES structure to have realistic and indicative figures. In other words, the CC is the daily limit but not the **realistic market flux** that the park will likely have, as this depends on market. **The table tells what we should aim for** to make the activities economically viable and to create reasonable economic benefits for the communities. As the destination becomes more mature, more visitors can be projected in the future. If we would use the e.g. 3.402 max seasonal tourist for the waterfall trail to calculate the seasonal economic benefits, the result would be unrealistic.

The table takes already in consideration the contribution to depreciation from each activity and to salary of CBT coordinator, still based on realistic projected market activities.

[1] Based on product characteristics, area features, accessibility, and full management capacity available as mentioned in the report – *Note:* less management capacity (e.g. daily tour guides available) = less daily and seasonal Carrying Capacity. Moreover, this is not a market projection so economic benefits are calculated, instead, based on realistic estimations. Therefore, **this value shows the maximum number of visitors that this product could potentially support, but not what is feasible marketwise.**

[2] Estimated based on expected weekly sold tours and on break-even point of the activity.

[3] Based on suggested market price (*what the CBT will receive for each activity/visitors) – *Note*: estimated development / depreciation / operational costs were considered in this estimation as close to reality as possible – figures are indicative and minor changes are likely to occur as the product develops and real costs become more clear.

[4] Estimated profit after the projected operational costs, contribution to CBT Coordinator salary and depreciation.

[5] Different CBT funds may be created based on how many committees are developed-based – here it is calculated as one total, but ideally different communities may benefit as mentioned in the report.

[6] A service provider is likely to benefit from different services if he/she is involved in other activities – figure based on break-even and the figure is likely to be higher – figure refers to the amount that will be spread to service providers but not boat driver, which was considered as a cost.

[7] Total expected contribution to other service providers – this figure is higher because it includes costs for fuels, boats, side-services during tours such as snacks, water etc. It aims to show the expected contribution to the wider communities through indirect economic benefits.