MANDATORY ANNEXES

1. Multi-year Workplan
2. Monitoring Plan
3. Evaluation Plan
4. GEF Tracking Tool (s) at Baseline
    a. Biodiversity 1 Tracking Tool
    b. Land Degradation Tracking Tool
    c. Sustainable Forest Management Tracking Tool
5. Terms of Reference for Project Management Bodies and Staff
6. UNDP Social and Environmental and Social Screening Template (SESP)
7. UNDP Project Quality Assurance Report
8. UNDP Risk Log
9. Results of the Capacity Assessment of the Project Implementing Partner and HACT Micro Assessment
10. Additional Agreements/ Co – financing letters

OPTIONAL ANNEXES

11. PA / Landscape Profiles
12. Capacity Development Scorecards
    a. Integrated Land and Seascape Management Scorecard – Tanintharyi Regional Government
    b. PA Administration Scorecard – Tanintharyi Regional Forestry Department
    c. PA Administration Scorecard – Tanintharyi Regional Department of Fisheries
13. Lists of People Consulted during Project Development
14. Socio-economic and Gender Situational Analysis on Tanintharyi Landscape, Seascape and Coastal Area
15. Baseline Report on Seascapes and Marine Resources
16. Baseline Report on Landscapes and Terrestrial Resources
17. Baseline reports on National Biological Survey and Knowledge Management Framework
18. Detailed maps of the project landscapes (source: FFI)
19. Dawna Tenasserim Landscape and Peace Parks
20. Roles of project stakeholders
21. Project assumptions for Theory of Change
22. Threats to Biodiversity, Underlying Factors and Baseline Analysis
23. Seascape Indicators 2014 - 2016

Annex 1:

Multi-year Workplan

- See separate file -

Annex 2:

Monitoring Plan

The Project Manager/Coordinator will collect results data according to the following monitoring plan.

<table>
<tr><th>Monitoring</th><th>Indicators</th><th>Data source/Collection Methods</th><th>Frequency</th><th>Responsible for data collection</th><th>Means of verification</th><th>Assumptions and Risks</th></tr>
<tr><td rowspan="3">Project objective:

Securing long-term protection of Key Biodiversity Areas through integrated planning and management of the protected area land/seascape in Tanintharyi</td><td>Indicator 1: Number of new partnership mechanisms with funding for sustainable management solutions of natural resources, ecosystem services, chemicals and waste at national and/or subnational level (IRRF Output 1.3 indicator 1.3.1)</td><td>Consultations with government institutions and partners to review mechanisms.</td><td>Annually</td><td>Project Manager/ M&E officer</td><td>Partnership agreements with budgets. Review reports/results Monitoring progress reports</td><td rowspan="3">Assumptions: Sectoral agencies are willing to cooperate at national, regional and district levels in order to achieve ILSM.

Increases in institutional capacity are sustained through retention of trained staff and organizational stability

Project will enhance regional governance by mainstreaming biodiversity and ecosystem service considerations and sustainable natural resource management, thereby providing environmental quality and ecological security benefits to all residents

Project team and evaluators will have access to government officers, local communities, project sites and documents to allow review of implementation progress

Risks: Lack of access to stakeholder informants, project sites and documentation.</td></tr>
<tr><td>Indicator 2:
Increase in ILSM Capacity Development Score of Tanintharyi regional government for integrated landscape and seascape management (ILSM), (see Annex 13a)

<table>
<tr><th></th><th colspan="3">ILSM Capacity Development Scorecard score</th></tr>
<tr><th></th><th>Baseline 2016</th><th>Mid-Term (PY3)</th><th>EoP Target (PY6)</th></tr>
<tr><td>Tanintharyi Regional Govt</td><td>7</td><td>15</td><td>36</td></tr>
</table>
</td><td>Assessment interviews with Tanintharyi Regional Government staff using ILSM CD Scorecard</td><td>Mid term and End of Project</td><td>Project Manager/ M&E officer</td><td>ILSM Scorecard results</td></tr>
<tr><td>Indicator 3: Number of direct project beneficiaries (parts of Kyunsu, Tanintharyi and Bokpyin townships within the project landscapes, based on spatial analysis of 2014 village tract census data)</td><td>Consultations with regional, district and township agencies, and community organisations; project assessments</td><td>Mid term and End of Project</td><td>Project Manager/ M&E officer</td><td>Reports from consultation processes; assessment results; monitoring progress reports</td></tr>
</table>

Monitoring	Indicators	Data source/Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions and Risks
Project Outcome 1 Enhanced institutional capacity for integrated management of forests, biodiversity and ecosystem services, increasing climate resilience and building a conducive environment for biological corridor network operationalization, indicated by:	**Indicator 4:** *Total area of globally significant terrestrial, coastal and marine ecosystems under integrated land and seascape management*	Consultations with Regional Govt planning staff and staff of key resource management agencies – FD and DoF; review of official documents; GIS mapping based on satellite imagery	Annually	Project Manager/ M&E officer	Official planning documents, progress reports; notifications and annual reports of community forests, community fisheries, LMMAs, protected areas, forest management units; technical reports based on GIS/RS mapping	**Assumptions:** The recognized benefits of ILSM towards providing ecosystem services, ecological security and biodiversity conservation outweigh the immediate short term economic benefits of sectoral land development practices The MoNREC / FD continue to provide strong political and financial support for the development and operational management of the PA system, as well as science-based integrated management of forest resources as key contributions towards national prosperity and ecological security. Key planners agree to include indicators for BD and ES in government plans and budgets. **Risks:** Insufficient funding resources and human resource constraint could hamper proactive operationalisation process. Delays in policy development due to loss of political interest. Budget constraints could shift focus away from BD and ES considerations.
	Indicator 5: *Number of regional and local plans informed by / integrating biodiversity information including KBAs, HCVF and HCSF distribution*	Consultations with national, regional and district FD and DoF staff; review of official documents; technical assessments of KBA, HCVF and HCSF coverage	Annually	Project Manager/ M&E officer; FD	Progress reports. Reports and maps of PAs and community managed areas; official gazettement notifications; GIS data from FD	**Assumptions:** Active engagement and support by key forestry staff, including sound funding base for SFM activities **Risks:** Limited human resources of responsible agencies might

<table>
<tr><th>Monitoring</th><th>Indicators</th><th>Data source/Collection Methods</th><th>Frequency</th><th>Responsible for data collection</th><th>Means of verification</th><th>Assumptions and Risks</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>hamper progress; potential stakeholder objections to PA establishment and gazettement if consultation process and community livelihood safeguards are inadequate</td></tr>
<tr><td></td><td>Indicator 6: Increase in scores of the GEF Financial Sustainability Scorecard (see Annex 4a).

<table><tr><th>Component</th><th colspan="2">Financial Sustainability Scorecard score (%)</th></tr><tr><th></th><th>Baseline (2016)</th><th>Target (PY6)</th></tr><tr><td>1. Legal, regulatory and institutional frameworks</td><td>15%</td><td>50%</td></tr><tr><td>2. Business planning and tools for cost-effective management</td><td>24%</td><td>60%</td></tr><tr><td>3. Tools for revenue generation</td><td>4%</td><td>40%</td></tr></table></td><td>Consultations with staff of FD, DoF, PAs and CSOs</td><td>Annually</td><td>Project Manager/ M&E officer</td><td>GEF BD-1 Financial Sustainability Scorecard
Monitoring and progress reports</td><td>Assumptions: National government supports removal of policy, legal and fiscal barriers to sustainable financing of PAs at national level.

Related sectors collaborate in facilitating diverse sources of income for PAs.

Risks: Lack of flexibility in adapting national and regional frameworks for governance and financing of PAs.
Lack of political interest in supporting PA sustainability.</td></tr>
<tr><td>Project Outcome 2
Biological corridor governance and management established, demonstrated, and linked to management of contiguous PAs</td><td>Indicator 7: Improved management effectiveness of individual existing and new PAs of global significance, covering over 500,000 ha, indicated by the percentage increase in the Management Effectiveness Tracking Tool (METT) scores (see Annex 4a):</td><td>Consultations with staff of FD, DoF and PAs and CSOs</td><td>Mid-term and end of project</td><td>Project Manager/ M&E officer, FD</td><td>GEF BD-1 Management Effectiveness Tracking Tool
Monitoring and progress reports</td><td>Assumptions: The Tanintharyi Regional Government and other key stakeholders continue to be committed to the extension of the PA system, buffer zones and corridors in the face of other demands for land and resources.

Risks: Financial and human</td></tr>
</table>

<table>
<tr><th>Monitoring</th><th>Indicators</th><th>Data source/Collection Methods</th><th>Frequency</th><th>Responsible for data collection</th><th>Means of verification</th><th>Assumptions and Risks</th></tr>
<tr><td></td><td>
<table>
<tr><th>Protected Area</th><th>METT Baseline Score (2016)</th><th>METT Target Score (PY6)</th></tr>
<tr><td>Lenya proposed NP (183,012 ha)</td><td>24</td><td>60</td></tr>
<tr><td>Ngawun (Lenya Extension) proposed NP (184,997 ha)</td><td>21</td><td>60</td></tr>
<tr><td>Tha Gyet (166,338 ha) and Thein Khun RFs (96,151 ha)</td><td>11</td><td>40</td></tr>
<tr><td>Thayawtatangyi Island LMMAs (5,626 ha)</td><td>38
36</td><td>65
65</td></tr>
<tr><td>Langaan Island LMMA (4,917 ha)</td><td>40</td><td>65</td></tr>
</table>
</td><td></td><td></td><td></td><td></td><td>resources needed for improved PA management are not made available</td></tr>
<tr><td></td><td>Indicator 8: Increased capacity of communities to plan and manage land and marine resources in an integrated and sustainable manner.</td><td>Consultations with regional, district and local government staff; community organizations and CSOs; project assessments</td><td>Project Mid Term and End of Project</td><td>Project Manager/ M&E officer / contracted survey teams</td><td>Sustainable Development Plans for village clusters; participatory land use plans for Smallholder Zone; Village Cluster Enforcement Network reports; Progress reports; technical assessment reports</td><td>Assumptions: KNU and community level stakeholders support the project interventions

Risks: Renewed political instability in the region</td></tr>
</table>

<table>
<tr><th>Monitoring</th><th>Indicators</th><th>Data source/Collection Methods</th><th>Frequency</th><th>Responsible for data collection</th><th>Means of verification</th><th>Assumptions and Risks</th></tr>
<tr><td rowspan="2">Project Outcome 3
Livelihood options for communities are more climate-resilient through diversification, SLM and climate-smart agriculture and livestock management and supported by enhanced infrastructure.</td><td>Indicator 9: Improved maintenance of the integrity and functioning of coral reef ecosystems within the targeted seascape, indicated by reef condition</td><td>Reef Check surveys[1]; remote sensing/GIS analysis; interviews with fishing communities and CSOs.
A long term monitoring plan (LTMP) will be developed by FFI for the archipelago with fixed transects. The focus initially would be on the GEF seascape area. These surveys would collect higher resolution information that would still be able to be compared to the original baselines. LTMP surveys could be done on an annual or biannual basis.

The RF uses the Reef check index score as per Habibi et al. (2007) with: Poor (0-25%), Average (26-50%), Good (51-75%) and Very Good (76-100%).</td><td>Annual / biannual</td><td>Project Manager/ M&E officer/ RPs responsible for marine conservation</td><td>Reef check survey reports; interview reports; progress reports; GIS maps and technical reports.

See Annex 23 for 2014-16 baseline data from Reefcheck surveys (FFI)</td><td>Assumptions: Forest conservation and improvement of watershed management combined with local reef conservation measures are sufficient to address key reef degradation factors

Risks: Coral reef condition is seriously impacted by elevated sea water temperatures related to El Nino episodes</td></tr>
<tr><td>Indicator 10: Status of selected indicator species in the targeted landscapes as indicated by monitoring protocols (see inset table)
<table><tr><th>Indicator Species (specify units of measurement</th><th>Baseline Status (Year X)</th><th>Target Status (PY6)</th></tr><tr><td>Tiger</td><td>TBC</td><td>TBC</td></tr></table></td><td>Standard survey methods as applied by FFI in the project landscapes; ref FFI species distribution maps.</td><td>Project Mid Term and End of Project</td><td>Project Manager/ M&E officer/ RPs responsible for terrestrial conservation</td><td>Technical reports by RPs responsible for terrestrial conservation; progress reports</td><td>Assumptions: Monitoring and status surveys of key species are conducted systematically.

Risks: Transboundary poaching and illegal wildlife trade exert major new impacts on Myanmar wildlife populations</td></tr>
</table>

[1] Howard, R., Zau Lunn, Antt Maung, Salai Mon Nyi Nyi Len, Soe Thiha and Soe Tint Aung (2014). Assessment of the Myeik Archipelago Coral Reef Ecosystem, Reef Check Surveys, January 2013 to May 2014. Report No. 5 of the Tanintharyi Conservation Programme, a joint initiative of Fauna & Flora International (FFI) and the Myanmar Forest Department. FFI, Yangon.

<table>
<tr><th>Monitoring</th><th>Indicators</th><th>Data source/Collection Methods</th><th>Frequency</th><th>Responsible for data collection</th><th>Means of verification</th><th>Assumptions and Risks</th></tr>
<tr><td></td><td><table>
<tr><td>Asian Elephant</td><td>TBC</td><td>TBC</td></tr>
<tr><td>Asian Tapir</td><td>TBC</td><td>TBC</td></tr>
<tr><td>Gurney's Pitta</td><td>TBC</td><td>TBC</td></tr>
<tr><td>Plain-pouched Hornbill</td><td>TBC</td><td>TBC</td></tr>
</table></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Indicator 11: Training programme in biodiversity conservation and monitoring is developed and institutionalised with adequate human and financial resources in place at Myeik University, addressing staff competence requirements within FD and DoF for staff engaged in PA and related conservation management work</td><td>Review of training activities with MU and SI; review of training curricula, reports on participation in training courses, participant evaluations</td><td>Annually</td><td>Project Manager/ M&E officer</td><td>Training course programmes and schedules, modular curricula, participants lists, progress reports, Myeik University human resource reports and annual budgets / financial reports</td><td>Assumptions: There is interest in participating in the training courses from university students and biodiversity conservation professionals (ie local demand)

Risks: Changes in institutional leadership change organizational priorities</td></tr>
<tr><td></td><td>Indicator 12: Increased institutional capacity to collect and analyse biodiversity information/data, and apply them to the conservation and management of PAs and KBAs, and land use planning, as indicated by the UNDP capacity development scorecard (see Annex 13b&c):

<table>
<tr><th>Target Institution</th><th>Capacity Development Baseline Score (2014)</th><th>Capacity Development Target Score (PY6)</th></tr>
<tr><td>Regional Forestry Department</td><td>35%</td><td>76%</td></tr>
<tr><td>Regional Department of Fisheries</td><td>33%</td><td>72%</td></tr>
</table></td><td>Review of FD and DoF websites, technical reports and scientific publications; progress reports; interviews with regional FD and DoF staff for UNDP CD Scorecard</td><td>Project Mid Term and End of Project</td><td>Project Manager/ M&E officer</td><td>Technical reports and scientific publications, website content, UNDP CD Scorecard assessment reports</td><td>Assumptions: Stakeholders responsible for hosting the information system, providing data and information and making use of the information are willing to collaborate and share information and resources openly.

The knowledge management system is sustainable, supported by the host government institutions and easily accessible to all stakeholders

Risks: Changes in institutional leadership change organizational priorities</td></tr>
</table>

Monitoring	Indicators	Data source/Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions and Risks
Component 4: **Knowledge Management, Monitoring and Evaluation** ***Outcome 4:*** *Enhanced knowledge management, monitoring and evaluation support biodiversity conservation in Tanintharyi*	**Indicator 13:** Number of key project lessons and strategies for sustainable land and seascape management documented, disseminated and adopted at local and national levels.	Logging of project website news articles and lessons learned articles; logging of technical reports made available online; reporting on Tanintharyi Land and Seascapes Knowledge Forums; communication with FD, DoF, Tanintharyi Regional Government	Annually	Project Manager/ M&E officer	Project website and associated websites; reports on Tanintharyi Land and Seascapes Knowledge Forums; progress reports; publications on project lessons learned; communications from FD, DoF, Tanintharyi Regional Government	*Involvement in the design and implementation of project interventions and knowledge sharing on the experiences and expected benefits of ILSM practices will result in long-term support for the project and adoption of new knowledge, skills and practices.*
Mid-term GEF Tracking Tools	GEF BD-1 GEF SFM GEF LD	Baseline GEF Tracking Tools included in **Annex 4**	After 2nd PIR submitted to GEF	Project Manager and IP in collaboration with key implementing partners: MoNREC / FD, DoF, Tanintharyi Regional Government	Completed GEF Tracking Tools	**Assumptions:** Continuous monitoring of project results on a quarterly basis will facilitate completion of the mid-term tracking tools prior to the MTR evaluation mission. Project team has the capacity and resources to complete the Tracking Tools **Risks:** Project team fails to conduct periodic monitoring of project results and therefore compromise the quality and completeness of the tracking tools. Lack of consistency in

Monitoring	Indicators	Data source/Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions and Risks
						how the tracking tools are completed.
Final GEF Tracking Tools	GEF BD-1 GEF SFM GEF LD	Baseline GEF Tracking Tools included in **Annex 4**	After final PIR submitted to GEF	Project Manager and IP in collaboration with key implementing partners: MoNREC / FD, DoF, Tanintharyi Regional Government	Completed GEF Tracking Tools	**Assumptions:** continuous monitoring of project results on a quarterly basis will facilitate completion of the TE tracking tool prior to the TE mission. Project team has the capacity and resources to complete the Tracking Tool **Risks:** Project team fails to conduct periodic monitoring of project results and therefore compromise the quality and completeness of the tracking tool. Lack of consistency in how the tracking tools are completed.
Mid-term Review and management response	N/A	Independent evaluators	Submitted to GEF same year as 3rd PIR	Independent Evaluators as contracted by UNDP	UNDP Cleared MTR Report	**Assumptions:** The budgeted resources are sufficient to support a comprehensive MTR process. **Risks:** The MTR team do not have access to all stakeholders and fully updated and completed information on the project. There is a delayed or ineffective management response to the MTR findings by the Project Board.
Terminal Evaluation and management response	N/A	Independent evaluators	Initiate 3 months before operation closure; to be submitted to GEF within three months of operational	Independent Evaluators as contracted by UNDP	UNDP Cleared TE Report	**Assumptions:** The budgeted resources are sufficient to support a comprehensive TE process. **Risks:** The TE team do not have access to all stakeholders and fully updated and completed information on the project. There is a delayed or ineffective management response to the

Monitoring	Indicators	Data source/Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions and Risks
			closure			TE findings by the Project Board.

ANNEX 3:

Evaluation Plan

ANNEX 4:

Tracking Tools

-See separated file -

Annex 5:

Terms of Reference

A. Project Board

The Project Board will be established to provide high-level guidance and oversight to steer the implementation of the project. It will meet at least twice a year, one of which will be held in Tanintharyi Region. Its membership should be limited to no more than nine persons to avoid it becoming unwieldy. Observers may be invited as necessary. It will also have capacity to make decisions through email correspondence between meetings, if this is agreeable to all PB members.

The Regional Technical Advisory and Coordination Group (~~RTACG~~RACG) and the Tanintharyi Land and Seascape Forum (TLSF) provide opportunities for informing the PB in support of effective and efficient project implementation, through the ~~RTACG~~RACG Chair represented on the PB and the TLSF Chair reporting to the ~~RTACG~~RACG and having proposed observer status on the PB.

Minutes will be taken and officially recorded for each Board Meeting by the PB secretary (PM). These will record the key points discussed, conclusions and decisions reached, and all resulting actions should be recorded with the time frame stated and lead responsibility assigned. The action taken for each point in the minutes should then be reviewed under 'Matters arising from the previous meeting' at the next Board meeting as standard practice.

Specific roles and responsibilities will include:

At the inception of the project:

- Review and confirm the PB membership and these Terms of Reference;
- Review and endorse the staff positions (and their ToRs) for the Project Management Unit;
- Agree on the Project Manager's tolerances as required (the decision-making power concerning budgets/changes in activities that can be made by the PM without escalating to the PB);
- Appraise the overall project inception plan, particularly in relation to how it translates the Project Document into an implementation plan and ensuring that all divergences from and changes to the Project Document are fully justified and documented;
- Review and approve the Annual Work Plan and budget ~~for the first project year;~~.
- Delegate any project assurance function as appropriate.

Commented [LLA1]: Why is it for only the first year? Contradict with UNDP (Implementing Agency's role? Pg. 62.

After initiation of the project:

- Provide overall guidance and direction to the project, ensuring it remains consistent with national policies and the planned activities are in line with the project objectives and timeframe;
- Address project issues raised by the Project Manager (PM), ~~RTACG~~RACG and TLSF for the PB's attention and guidance;
- Provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks;
- Review and approve Annual Work Plans and budgets;
- Appraise the project annual review report, including the quality assessment rating report; make recommendations for the workplan; and inform the UNDP Programme Manager about the results of the review;
- Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Commission Mid-term Evaluation of the project, appraise the MTE Report and provide direction to the project to address the recommendations emanating from the MTE Report;
- Review project progress reports submitted by the PMU and notify, or provide guidance to, the PMU for corrective actions should they find any issue with the project's progress.
- Facilitate smooth implementation of the project through provision of support to PMU in communications and coordination of activities involving other sectors, including the establishment of multi-sector mechanisms and processes to deliver specific project outputs and outcomes. (Note that much of this is delegated to the ~~RTACG~~RACG.)
- Provide ad hoc direction and advice for exceptional situations when the PM's tolerances are exceeded; and
- Assess and decide to proceed on project changes through appropriate revisions.
- One year prior to the end of the project, ensure that necessary steps are being taken by PMU to develop an Exit Strategy.

Commented [LLA2]: Is it UNDP's role? Or PB?

At the close of the project:

- Assure that all project deliverables have been produced satisfactorily;

- Commission the Terminal Evaluation of the project at least 6 months before closure, and appraise and endorse the TE Report;
- Provide recommendations for follow-up actions;
- Assure that the Exit Strategy is in place and owned by relevant institutions and notify operational completion of the project.

Commented [LLA3]: Is it UNDP's role?

The proposed composition of the PB is given below:

(1) Country Director of the United Nations Development Programme (Co-Chair of the Board);
(2) Director General of the Forestry Department (Co-Chair of the Board);
(3) Director of the Department of Fisheries;
(4) Director of General Administration Department of Tanintharyi Regional Government (also proposed as Chair of the Regional Technical Advisory and Coordination Group);
(5) Senior representative of the Karen National Union;
(6) Up to three additional members with the agreement of the above PB members, such as CSO representative, Tourism and Hotels Department, Planning Department, etc.

The PM will provide secretariat support to the Project Board, including the organization of PB meetings, recording and sharing of minutes, development of the draft agenda, etc.

It is proposed that the Chair of the project's Stakeholder Forum should be considered for Observer status on the Project Board

B. Regional ~~Technical~~ Advisory and Coordination Group

The ~~RTACG~~RACG will be chaired by the Director of the General Administration Department (GAD) of the Tanintharyi Government. The Chairperson will represent the ~~RTACG~~RACG on the Project Board and will liaise with the Project Manager.

The ~~RTACG~~RACG has two main roles. First, to coordinate a holistic approach to project implementation, supported by sound science to achieve integrated land and seascape management that encompasses biodiversity conservation, sustainable resource management, climate change adaptation and community livelihoods. Secondly, it will provide technical advice to the project manager, ensuring that the project interventions are technically sound and in keeping with Government of Myanmar and UNDP/GEF social, environmental and other standards.

The ~~RTACG~~RACG will primarily consist of the technical experts from the participating agencies and partner organisations. Such a multi-disciplinary group is deemed necessary, especially given the scientific, technical and coordination intricacies that are expected to arise during implementation. The Group will meet at least every quarter, including about one month before each PB meeting, and have responsibility for the following specific functions:

- Promote and lead inter-institutional coordination for the implementation of the project components, especially supporting opportunities for synergy and sharing of lessons;

- Review the planned activities and ensure that they are technically sound and in line with the project objectives and time-frame;
- Provide guidance, and/or clarifications, where technical and inter-institutional issues are confronted;
- Ensure that the project activities are carried out in accordance with the desired standards and norms and are cognizant of the national and local context;
- Review and suggest inputs for ToRs for consulting tasks and assist selection of project consultants (as requested), review consulting reports/ deliverables and provide feedback on them;
- Provide advice to the Project Manager;
- Consult with the Tanintharyi Land and Seascape Forum on key issues, and take account of feedback and suggestions provided by the Forum.
- Receive inputs from the landscape and issue-based Working Groups and provide guidance and feedback as needed, and seek information from them on specific issues.

It is proposed that the ~~RTACG~~RACG be composed of up to fifteen scientific/technical experts to be confirmed by the PB, which will include regional representatives of the following organizations:

1. General Administration Department (Chair)
2. Forestry Department (Chair Landscape / Corridor Working Groups)
3. Department of Fisheries (Chair of Seascape Working Group)
4. Department of Agriculture
5. Environmental Conservation Department
6. Department of Rural Development
7. Planning Department
8. Navy
9. Myeik University
10. Smithsonian Institution
11. Fauna and Flora International
12. Chair of the Stakeholder Forum
13. Others as required

Furthermore, the ~~RTACG~~RACG may invite other resource persons/experts to its meetings depending on the need for additional information, clarification and advice on any specific technical issues related to the project interventions.

The Senior Technical Advisor will act as secretary for the ~~RTACG~~RACG, be responsible for organizing ~~RTACG~~RACG meetings, preparing the draft agenda, taking and sharing minutes, etc.

The meetings and proposed electronic group for the **Stakeholder Forum** (see below) provides the opportunity for wider coordination and engagement of other stakeholders and related initiatives, with the TLSF Chair reporting to the ~~RTACG~~RACG and also having proposed observer status on the PB.

D. Project Management Staff

Project Manager

Under the guidance and oversight of the UNDP Country Director, the Project Manager will provide operational supervision and management to the project on a full-time basis. The Project Manager will report to the UNDP Country Director. Specific roles and responsibilities will include:

- Supervise and guide all the Project support staff on a day-to-day basis;
- Ensure that the inputs from GoM, UNDP/GEF and other partners to the project are forthcoming in a timely and effective manner;
- Oversee and ensure the implementation of the project's M&E plan;
- Examine and verify annual work plans and budgets for onward submission to the PB for perusal and approval;
- Ensure timely compilation and submission of technical and financial progress reports in accordance with the requirements specified in the Project Document;
- Coordinate with the responsible parties for implementation of project activities and provide necessary backstopping including site visits where necessary;
- Organize PB meetings in a timely and efficient manner, and ensure that necessary documents (agenda, annual work plans and budgets, progress reports, relevant background documents and technical reports, etc) for these meetings are circulated to the members two weeks in advance, and that the minutes of these meetings are produced and disseminated within a week after the meeting;
- Provide project information required by the PB, ~~RTACG~~RACG, TLSF and UNDP, including progress reports and other documents produced by the project in a timely manner;
- Recruit and supervise project consultants in accordance with UNDP procedures, ensuring the quality of consulting inputs is of the desired quality and in accordance with the approved ToR[2];
- Network with other relevant agencies and projects and establish linkages for learning and sharing experiences and developing synergies;
- Facilitate mid-term and terminal evaluations of the project;
- Visit project sites as and when necessary to appraise project implementation and related issues in interaction with local project stakeholders.

The Project Manager will be a local consultant recruited based on the following qualifications

- At least a Masters degree, preferably in the field of environmental management, sustainable livelihoods, or rural development;
- At least ten years of work experience in project-relevant field(s) preferably with at least five years in a project management setting involving multi-lateral/ international funding agency. Previous experience with UN project will be a definite asset;
- Sound understanding of biodiversity and ecosystem conservation, climate change adaptation and sustainable livelihoods, and associated issues;

[2] Consultant recruitment processes should follow UNDP procedures and include balanced representation on selection panels that review the candidates

- Very good knowledge and experience of results-based management and project cycle management;
- Very good inter-personal skills;
- Very good computer skills;
- Excellent language skills in English (writing, speaking and reading) and in Burmese (speaking and reading).

Project Assistant

Under the guidance and supervision of the Project Manager, the Project Assistant will carry out the following tasks:

- Assist the Project Manager in day-to-day management and oversight of project activities, including matters related to M&E and knowledge resources management;
- Assist in the preparation and compilation of progress reports;
- Ensure all project documentation (progress reports, consulting and other technical reports, minutes of meetings, etc.) are properly maintained in hard and electronic copies in an efficient and readily accessible filing system, for when required by PB, ~~RTACG~~RACG, TLSF, UNDP, project consultants and other PMU staff;
- Provide Project-related administrative and logistical assistance.

The Project Assistant will be recruited based on the following qualifications:

- A Bachelors degree or an equivalent qualification;
- At least three years of work experience, preferably in a project involving biodiversity conservation, natural resource management, climate change adaptation or sustainable livelihoods. Previous experience with a UN project will be a definite asset;
- Very good inter-personal skills;
- Proficiency in the use of computer software applications especially MS Word and MS Excel.
- Excellent language skills in English (writing, speaking and reading) and in Burmese (speaking and reading);

Senior Technical Advisor on Integrated Land and Seascape Management (International Consultant)

The Senior Technical Advisor (STA) will be responsible for ensuring the strategic and technical quality and consistency of the project's approach towards developing and implementing a framework for ILSM in the Tanintharyi Region, by providing overall technical supervision, advice, guidance and support for strategic planning and implementation to achieve the project's objectives. The position will act as Secretary for the Regional Technical Advisory and Coordination Group and provide technical and logistical support to this Group.

The STA will render technical advice and inputs to the Project Manager (PM), MoNREC, Tanintharyi Regional Government and other government departments (such as local Forestry Department and Department of Fisheries offices), and will provide technical oversight to international and national consultants and

subcontractors to ensure a consistent approach at regional and site levels. S/he will report to the Project Manager in a timely manner regarding important issues arising during project implementation. S/he will lead on providing technical clearance for reporting, monitoring & evaluation (Tracking Tools and Scorecards), and documentation required for the project's Mid-Term Review (MTR) and Terminal Evaluation (TE). S/he will also lead on preparing and reviewing Terms of Reference for contracted project inputs relating to ILSM.

Duties and Responsibilities

The STA will closely work with the PM and report to the UNDP Programme Manager. S/he will perform technical tasks as follows:

- Provide technical support for project coordination, as well as measurement and documentation of project progress and impacts as they relate to ILSM;
- Advise UNDP, MoNREC, Forest and Fisheries Departments, Tanintharyi Regional government, and other Responsible Parties on ILSM;
- Act as Secretary to the ~~RTACG~~RACG, including organizing meetings, preparing the agenda, recording and disseminating minutes and providing technical inputs and advice
- Be responsible for quality assurance of ILSM and biodiversity conservation analysis and related conservation and sustainable development studies, and draft reports and documents to support the ILSM decision making process;
- Provide technical inputs for preparing ToRs and developing methodologies in the execution of various technical studies to be carried out through the project, as well as assuring the technical quality of reports compiled by consultants[3];
- Ensure the technical quality of the project inception report, annual progress reports, Project Implementation Review (PIR), mid-term review self-assessment reports, and terminal evaluation self-assessment reports;
- Support effective M&E processes, by ensuring that project workplans, inputs and reporting are explicitly linked to the project Results Framework, and that progress against indicators is monitored and updated, and subjected to necessary approval processes via UNDP RTA where changes are recommended and supported by the Board. This should include thorough review of the project Results Framework during project Inception.
- Support a learning approach to project implementation, through feedback from progress reports, lessons learned, technical studies and stakeholder consultations in guiding adaptive changes to project strategy and workplans, budget allocations and implementation arrangements in order to optimize accomplishment of the project objective and outcomes.
- Provide technical inputs to project reports for consideration by mid-term review and terminal evaluation exercises, especially clearance for Tracking Tools and Scorecards;
- Support MoNREC/Forest Department and regional government agencies in implementation of their strategic plans;
- Produce policy briefing papers and project technical and periodic reports for advocacy and knowledge management as appropriate;
- Ensure that sound conservation principles are adhered to during project intervention and be responsible for monitoring that intended biodiversity conservation outcomes of the project are attained;
- Assist the MoNREC/Forest Department and regional government agencies through related policy and strategy development processes, as well as any internal streamlining processes to ensure that adequate human and financial resources are properly budgeted for and included for effective biodiversity conservation outcomes and effective PA management;

[3] The quality of report presentation and language is the responsibility of the contractor, not the CTA

- Ensure that the MoNREC/Forest Department and regional government agencies institute effective and sustainable biodiversity monitoring and evaluation mechanisms at both local and national levels, including support for integrated land and seascape management, PA management planning, PA performance monitoring, scientific database consolidation and knowledge management;
- Support the identification and design of training courses, and where appropriate (based on own skill set), contribute to their delivery;
- Act as a champion in important domestic and international events for promoting the project's impacts and policy advocacy, including interaction with media when delegated by the UNDP CO;
- Contribute to the project's communications and outreach efforts, including inputs to development of communications strategy at project outset and subsequent information materials;
- Assist in promoting inter-institutional cooperation within the conservation and related sectors around areas of mutual interest and concern;
- Assist the PM in liaison work with project partners, donor organizations, NGOs and other groups to ensure effective coordination of project activities;
- Document lessons from project implementation and make recommendations to the Project Board for more effective implementation and coordination of project activities;
- Contribute to the development of an Exit Strategy in the penultimate year of the project
- Support the promotion of gender equity in the programme where possible, and;
- Perform other duties relevant to the project and his/her expertise.

Required Skills and Experience

- An advanced degree in conservation, natural resources management, environmental science or related fields, preferably in biodiversity conservation and management.
- At least 15 years of professional experience in the field of ecosystems and biodiversity management, in particular experience working on integrated ecosystem management, conservation and protected area management, including enforcement issues, in tropical developing countries;
- Professional experience of natural resource management at the land/seascape level including both terrestrial and coastal/marine tropical ecosystems;
- Extensive experience with project development, implementation and management (experience in multilateral and government-funded conservation projects is preferable);
- Previous working experience in a senior technical advisor capacity on multi-sectoral projects, preferably with knowledge of GEF, UNDP policies, procedures and practices;
- Experience in working in the relevant fields in Myanmar and with its government, experience working in international organizations in Myanmar or abroad, and experience with private sector engagement in tourism and agriculture are strong assets;
- Demonstrated ability to work sensitively with stakeholders with regard to different cultures, genders, political and religious views and socio-economic status
- Fluency in written and spoken English is required; good working knowledge of Burmese is an asset.

Integrated Landscape and Seascape (ILSM) Advisor

The ILSM Advisor will work very closely with the STA in ensuring the technical quality and consistency of the project's approach towards developing and implementing a framework for ILSM in the Tanintharyi Region, by providing overall technical advice, guidance and support for landscape planning and implementation to achieve the project's objectives.

- Advise project implementing partners on strategic and technical ILSM matters to achieve a coordinated and integrated approach in Component 1;
- Coordinate implementation of the project's M&E plan with regard to ILSM indicators;
- Facilitate and guide development of annual work plans and budgets for Component 1 of the project;
- Facilitate and guide the compilation of progress and technical reports for Component 1 activities;
- Coordinate with the responsible parties for implementation of Component 1 activities and provide necessary backstopping including site visits where necessary;
- Support the STA and facilitate the operations of the ~~RTACG~~RACG, TLSF and landscape Working Groups through providing information and guidance;
- Network with other relevant agencies and projects on ILSM issues and establish linkages for learning and sharing experiences and developing synergies.

The ILSM Advisor will be a local consultant recruited based on the following qualifications

- At least a Masters degree, preferably in the field of environmental management, sustainable livelihoods, or rural development;
- At least ten years of work experience in project-relevant field(s) preferably with at least five years in a project advisory setting involving multi-lateral/ international funding agency. Previous experience with UN projects will be a definite asset;
- Sound understanding of biodiversity and ecosystem conservation, climate change adaptation and sustainable livelihoods, and associated issues;
- Very good inter-personal skills;
- Very good computer skills;
- Excellent language skills in English (writing, speaking and reading) and in Burmese (speaking and reading).

Landscape Coordinators (for Landscapes, Seascapes and Corridor)

The Landscape Coordinators (LC) will be drawn from the regional government agencies with lead responsibility for the respective landscape types: FD for Landscapes and Corridor WGs, and DoF for Seascapes (including input to Landscapes WG on mangrove issues). Their functions will be supported through Responsible Party agreements between UNDP and the respective agencies, as well as cofinancing from the respective agencies.

The role of the LCs is to provide a coordination and liaison function between the lead agencies and project management/UNDP, as well to lead and support the operations of project Working Groups to be established for each of the three landscape types.

Specific duties of the LCs will be as follows:

- Act as focal point for the regional government for coordination of project inputs regarding landscape/seascape/corridor coordination, respectively;
- Liaise with the Project Manager through at least quarterly meetings to share information on government-led developments, progress on project activities, needs arising and key issues requiring attention from the project;
- Participate in relevant project activities, including ILSM training and capacity development; surveys and monitoring; preparation of technical studies and baseline analyses; and development of policies, strategies and plans for resource management and conservation;
- Provide inputs to project progress reports, especially on cofinanced and parallel activities supporting project implementation;
- Organize and Chair meetings of the Landscape/Seascape/Corridor Working Groups in a timely and efficient manner, and ensure that necessary documents (agenda, relevant background documents and technical reports, etc) for these meetings are circulated to the members two weeks in advance, and that the minutes of these meetings are produced and disseminated within a week after the meeting;
- Coordinate the flow of information and recommendations from the Landscape/Seascape/Corridor Working Groups to the Project Manager, STA on ILSM and ~~RTACG~~RACG for their information and action;
- Provide information to the PM for use in communications, including articles for project websites, inputs to periodic project TLSF meetings, etc.

ANNEX 6:

SOCIAL AND ENVIRONMENTAL PRE-SCREENING FOR PIF STAGE

The completed template, which constitutes the Social and Environmental Screening Report, must be included as an annex to the Project Document. Please refer to the Social and Environmental Screening Procedure for guidance on how to answer the 6 questions.]

Project Information

Project Information	
1. Project Title	Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi
2. Project Number	PIMS 5427
3. Location (Global/Region/Country)	Myanmar

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?
Briefly describe in the space below how the Project mainstreams the human-rights based approach

The project will be implemented in line with the UNDP Country Programme Action Plan between the Government of Myanmar and UNDP under UNDP's Direct Implementation Modality (i.e. PMU staff will be contracted by and report to the UNDP Country Office. As such, implementation will follow UNDP standards with respect to human rights and all aspects of implementation will be subject to UNDP oversight. Implementation will also abide by the new national Constitution that was adopted in May 2008, which is more specific in providing for basic principles of democracy and the rule of law and human rights although some of the principles laid out in this Constitution have yet to be fully reflected in the laws, regulations and policies currently in place. The President has set out a reform agenda focusing on good governance and ensuring fundamental rights.

The project design seeks to uphold human rights and implement a human rights based approach in its delivery of goods and services. During the design of the project interventions, UNDP as the IA for the project ensured participatory process focusing on strengthening capacity of the duty bearers to meet their obligations and the right holders to claim their rights. The project stakeholders at the national, regional, district and community levels were fully consulted to design interventions that are inclusive, promote ownership and are environmentally sustainable. The project gives special attention to vulnerable and marginalized groups, including the ethnic minorities living within the targeted landscapes. This has included consultation with a wide range of stakeholders at all levels during project preparation, including representatives of communities in the project landscapes as documented in **Annex 13**.

At a broad level, participation and representation of stakeholders will be conducted through the governance structures put in place by the project as outlined and depicted in the organogram in the Governance and Management Arrangements section, and through the existing governance structures at national, regional and local levels (e.g. national government ministries and departments, regional government agencies (eg forestry, fisheries), PA management authorities, and district and township administrations. Stakeholders will be consulted and engaged throughout the project implementation phase to: (i) promote understanding of the project's outcomes; (ii) promote stakeholder ownership of the project through engagement in planning, implementation and monitoring of the project interventions; (iii) communication to the public in a consistent, supportive and effective manner; and (iv) maximisation of linkage and synergy with other ongoing projects. Specific means of engagement with communities are described in the stakeholder engagement section for each project component. These include small grants disbursed for sustainable livelihoods in component 2, and the operation of a Stakeholder Forum to provide a mechanism for sharing views and experiences in component 3. By focusing on both practical and strategic gender needs and priorities, the project addresses the needs of both men and women consistent with non-discrimination and equal human-rights principle. To promote the legality and accountability of any adverse project impacts, existing formal and informal grievance redress mechanisms will be adopted at the local and regional levels and brought to the attention of the Project Board.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

In order to achieve gender mainstreaming in this project, consultations and assessments during project preparation obtained gender disaggregated information on resource use and conservation, and social and economic background information on women's perspectives and the realities of life in their communities, for example where Female Headed Households (due to bereavement, drug and alcohol abuse, etc) are significantly more vulnerable than Male Headed Households. This is described in detail in **Annex 14**.

The project aims to ensure equal participation of men and women so as to fully take into account the different perspectives, priorities and socio-economic realities that women and men face. Project implementation will proactively seek equal participation of women for planning and decision making among the key stakeholders, including regional and local government agencies and local communities. Project design pertaining to institutional strengthening and capacity building will ensure target trainees will include both sexes and institutional development will mainstream gender in the institutional system and decision making mechanisms. Gender disaggregated targets and baselines have been included as part of the project monitoring plan. See **Table 5** for proposed actions to mainstream gender into the projects outputs and activities. Overall, the project will integrate gender equality and a social inclusion perspective in programme/project planning and implementation. This is to ensure equal participation of both women and men and people from different economic and social backgrounds in project planning and decision making, in order to make certain that neither of the groups is disadvantaged by the project activities and will derive equal benefits from the project activities.

Briefly describe in the space below how the Project mainstreams environmental sustainability

This objective of this project is *to secure the long-term protection of Key Biodiversity Areas through integrated planning and management of the protected area land/seascape in Tanintharyi.* As such, its impacts on biodiversity and environmental sustainability are expected to be overwhelmingly positive, through measures including capacity development of the regional government and local communities, development of CBRNM and community conserved areas, and participation in protected area management. The project will also work with sectoral agencies and resource users to develop sustainable land use plans and resource management within the project landscapes, with an emphasis on integrated landscape and seascape management supported by enhanced information on biodiversity status and landuse / land cover maps. Overall, the project will assist Myanmar to meet its commitments under the CBD and Ramsar Convention on Wetlands (including mangroves, coral reefs and shallow coastal waters).

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses).*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk Description	***Impact and Probability (1-5)***	***Significance (Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***
Risk 1: Adverse impacts on human rights of local communities, including marginalized groups.	I = 3 P = 3	Moderate	The main concern expressed by the Karen National Union (KNU) is that the development of new protected areas by the project could displace people currently living in these areas, as well as inhibit the return of IDPs and settlement of refugees in such areas.	During the project design, specific efforts were made to meet with the KNU to discuss this issue and to find a way of working together through the project. Consequently, the KNU has been allotted a position on the Project Board, and the project has agreed not to intervene in the Tanintharyi proposed National Park area in view of KNU concerns. The project will make available a grievance mechanism, the use of which would be reported to the UNDP CO and Project Board. The overall project approach will involve consultations and engagement of all villages in the project target areas in order to obtain support and agreement for proposed project activities.
Risk 2: Restricted access to natural resources due to enhanced enforcement for local communities, including marginalized groups.	I = 3 P = 3	Moderate	Enhanced enforcement by Myanmar government agencies could restrict access to natural resources for some local people, especially for any involved in illegal activities such as poaching, illegal fishing and wildlife trade.	The project will support the establishment or upgrading of PAs. There will be no changes in land use rights or other new restrictions. The original dwellers/ local people who traditionally earn their living on long term plantations continue to work on them. In the past, some villages were released from PAs since they have been residing inside PA. However, the project will aim restrict/control newcomers who are looking for new land in order to clearing new plots that could destroy to forest land in order to claim ownership. Overall, the project will adopt a participatory and consultative approach towards the management of natural resources. It will actively promote and support through small grants the involvement of communities and local organizations in various types of CBNRM, including community forestry, community fisheries, community based tourism and participation in park management. Thus the emphasis is on strengthening the sustainability of local livelihoods rather than strict nature protection. The project aims to ensure that its activities do not restrict **legal access** of local people to natural resources. In addition, appropriate mitigation measures will be considered and incorporated if it is judged that project activities will curtail illegal activities which form a

				significant portion of local peoples' livelihoods.
Risk 3. Duty-bearers do not have the capacity to meet their obligations in the Project	I = 2 P = 3	Low	The project will engage a wide range of people in various roles to implement the project activities. In some cases, it is quite possible that the responsible person has not been exposed to such project implementation procedures, reporting, accountability etc.	Capacity needs assessment of the Responsible Parties will be conducted by UNDP CO prior to submission of the proposal to GEF. Capacity development for individuals at community level will be supported through implementation processes, including training and facilitation of CBOs and Local NGOs to conduct project activities.
Risk 4. Rights-holders do not have the capacity to claim their rights	I = 3 P = 3	Moderate	Illiteracy is high among some communities (see socio-economic assessment in **Annex 14**) and most if not all are emerging from a long period of civil war and conflict. The political situation is changing rapidly as are national laws. There are few sources of information about current rights except for NGO networks.	Community participation processes will need to engage and train local NGO networks and CBOs that can successfully interact and educate local communities in project landscapes regarding their land tenure rights and other human rights. The Karen Development Network is one such organization that is actively engaged in human rights education work, as well as womens rights.
Risk 5. human rights concerns raised by local people regarding the Project during the stakeholder engagement process	I = 2 P = 5	Moderate	See Risk 1 above.	See Risk 1 above
Risk 6: Project activities are within or adjacent to environmentally sensitive areas including PAs.	I = 1 P = 5	Low	Most project activities will occur in KBAs, proposed protected areas and existing protected areas, but the intention is to benefit biodiversity.	The project is pro-conservation and pro-sustainability. No significant infrastructure development or other activities with high environmental impact are envisaged.
Risk 7. Harvesting of natural forests, plantation development, and reforestation	I = 1 P = 5	Low	The project will support CBNRM including community forestry and sustainable village livelihoods which involve management and rehabilitation of unprotected forest lands	The project will incentivize and create capacity for sustainable forest management at the community level through community forestry and promoting and supporting sustainable livelihood options. The aim is to secure biodiversity and ecosystem services within living and working landscapes as far as possible.
Risk 8. Production and/or harvesting of fish populations and or other aquatic species	I = 1 P = 5	Low	The project will support the management of Locally Managed Marine Areas – community based fishery resource management	Tanintharyi's fishery resources have been decimated by commercial fishing practices. The LMMA approach aims to bring resource control back to local communities with enforcement support and TA from the government. At the same time, the community gain their power and confidence about conserving their own handful of territory. This needs to be supported by a proper documentation registration process that is accepted by government (4 LMMAs have been certified by DoF). The aim is to recover stocks of locally important species for local exploitation, and to incentivize locally based protection of valuable coastal

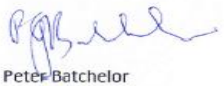
				habitats including mangroves, seagrass beds and coral reefs.
Risk 9. Possibility of economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)	I = 3 P = 2	Low	See Risk 1 above. In addition, the project will support regional land use planning by government, informed by geospatial datasets. Both the government and the project will not seek to move any households or communities. However, certain commercial interests such as plantation companies may be affected by decisions taken by the regional government.	The approach to regional planning will be consultative, and in the case of local communities, participatory, handled through official local government mechanisms with TA from the project. The situation is very dynamic at present, with IDPs returning to ancestral lands sometimes to find them occupied by oil palm plantations given out by the previous government. The companies have taken some individuals to court after they felled palm trees in such areas. The government is reviewing the situation carefully. The project's role will be to ensure that best available information is provided to the regional government to assist in well informed decision making.
Risk 10. Possible effect on land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources	I = 3 P = 2	Low	See risks 1 and 9 above.	As mentioned above, the project will take a consultative and participatory approach to regional planning, conservation area development and resource management. Customary land use / rights / tenure will be fully respected by the project, and in fact the project will help to map out such claims as part of its participatory land use planning approach, in line with WCS's model Southern Forest Complex CBNRM programme in Dawei District.
Risk 11. The Project or portions of the Project will be located on lands and territories claimed by ethnic minorities	I = 1 P = 5	Low	The Moken people are an ethnic minority entirely dependent on fishing practices on the islands of the Myeik Archipelago. Also some Karen and Mon communities are forest-dwellers in the Tanintharyi Range. The project landscapes encompass some such communities.	The project will take a positive engagement strategy towards ethnic minorities / indigenous peoples within the project landscapes, and will seek to assist them in developing sustainable marine / forest resource use within the context of their own traditions and customs. Small grants schemes will be provided to such communities along with technical assistance and awareness raising. In the case of the Moken, the project will also try to facilitate action by competent parties to reduce the occupation-related drug use that is destroying families and communities.
Risk 12. The proposed Project may potentially affect the rights, lands and territories of ethnic minorities regardless of whether they possess the legal titles to such areas	I = 3 P = 2	Low	See Risk 11	See Risk 11. The project will respect the legal, traditional and customary rights of ethnic minorities / indigenous peoples within the project landscapes, and seek to be positive assistance towards them.

QUESTION 4: What is the overall Project risk categorization?

Select one (see SESP for guidance)		Comments
Low Risk	☐	
Moderate Risk	☐X	
High Risk	☐	

QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
Check all that apply		**Comments**
Principle 1: Human Rights	☒	
Principle 2: Gender Equality and Women's Empowerment	☐	
1. Biodiversity Conservation and Natural Resource Management	☒	
2. Climate Change Mitigation and Adaptation	☐	
3. Community Health, Safety and Working Conditions	☐	
4. Cultural Heritage	☐	
5. Displacement and Resettlement	☒	
6. Indigenous Peoples	☒	
7. Pollution Prevention and Resource Efficiency	☐	

Final Sign Off

Signature	*Date*	*Description*
QA Assessor  Lat Lat Aye Team Leader (Environmental Governance & Disaster Resilience)	1 Dec. 2016	UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver  Peter Batchelor Country Director	1 Dec. 2016	UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	Yes
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [4]	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	Yes
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5.	Are there measures or mechanisms in place to respond to local community grievances?	No
6.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	Yes
7.	Is there a risk that rights-holders do not have the capacity to claim their rights?	Yes
8.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	Yes
9.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
3.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	No
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive	Yes

[4] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

	areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	Yes
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	Yes
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[5] greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No

[5] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	Yes
5.3	Is there a risk that the Project would lead to forced evictions?[6]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	Yes
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	Yes
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	Yes
6.3	Would the proposed Project potentially affect the rights, lands and territories of indigenous peoples (regardless of whether Indigenous Peoples possess the legal titles to such areas)?	Yes
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.4	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.5	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.6	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.7	Would the Project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples?	No
6.8	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		

[6] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

Annex 7:

UNDP Project Quality Assurance Report

PROJECT QA ASSESSMENT: DESIGN AND APPRAISAL

OVERALL PROJECT

EXEMPLARY (5) ●●●●●	HIGHLY SATISFACTORY (4) ●●●●○	SATISFACTORY (3) ●●●○○	NEEDS IMPROVEMENT (2) ●●○○○	INADEQUATE (1) ●○○○○
At least four criteria are rated Exemplary, and all criteria are rated High or Exemplary.	All criteria are rated Satisfactory or higher, and at least four criteria are rated High or Exemplary.	At least six criteria are rated Satisfactory or higher, and only one may be rated Needs Improvement. The SES criterion must be rated Satisfactory or above.	At least three criteria are rated Satisfactory or higher, and only four criteria may be rated Needs Improvement.	One or more criteria are rated Inadequate, or five or more criteria are rated Needs Improvement.

DECISION

- **APPROVE** – the project is of sufficient quality to continue as planned**.** Any management actions must be addressed in a timely manner.
- **APPROVE WITH QUALIFICATIONS** – the project has issues that must be addressed before the project document can be approved. Any management actions must be addressed in a timely manner.
- **DISAPPROVE** – the project has significant issues that should prevent the project from being approved as drafted.

RATING CRITERIA

STRATEGIC

1. Does the project's Theory of Change specify how it will contribute to higher level change? (Select the option from 1-3 that best reflects the project): • **3:** The project has a theory of change with explicit assumptions and clear change pathway describing how the project will contribute to outcome level change as specified in the programme/CPD, backed by credible evidence of what works effectively in this context. The project document clearly describes why the project's strategy is the best approach at this point in time. • **2:** The project has a theory of change. It has an explicit change pathway that explains how the project intends to contribute to outcome-level change and why the project strategy is the best approach at this point in time, but is backed by limited evidence. • **1:** The project does not have a theory of change, but the project document may describe in generic terms how the project will contribute to development results, without specifying the key assumptions. It does not make an explicit link to the programme/CPD's theory of change. *Note: Management Action or strong management justification must be given for a score of 1	3 **2** 1 **Evidence** Page 15
2. Is the project aligned with the thematic focus of the UNDP Strategic Plan? (select the option from 1-3 that best reflects the project): • **3:** The project responds to one of the three areas of development work[7] as specified in the Strategic Plan; it addresses at least one of the proposed new and emerging areas[8]; an issues-based analysis has been incorporated into the project design; and the project's RRF includes all the relevant SP output indicators. *(all must be true to select this option)* • **2:** The project responds to one of the three areas of development work[1] as specified in the Strategic Plan. The project's RRF includes at least one SP output indicator, if relevant. *(both must be true to select this option)* • **1:** While the project may respond to one of the three areas of development work[1] as specified in the Strategic Plan, it is based on a sectoral approach without addressing the complexity of the development issue. None of the relevant SP indicators are included in the RRF. This answer is also selected if the project does not respond to any of the three areas of development work in the Strategic Plan.	3 **2** 1 **Evidence** Page 48

[7] 1. Sustainable development pathways; 2. Inclusive and effective democratic governance; 3. Resilience building

[8] sustainable production technologies, access to modern energy services and energy efficiency, natural resources management, extractive industries, urbanization, citizen security, social protection, and risk management for resilience

RELEVANT	
3. Does the project have strategies to effectively identify, engage and ensure the meaningful participation of targeted groups/geographic areas with a priority focus on the excluded and marginalized? (select the option from 1-3 that best reflects this project): • **3:** The target groups/geographic areas are appropriately specified, prioritising the excluded and/or marginalised. Beneficiaries will be identified through a rigorous process based on evidence (if applicable.)The project has an explicit strategy to identify, engage and ensure the meaningful participation of specified target groups/geographic areas throughout the project, including through monitoring and decision-making (such as representation on the project board) *(all must be true to select this option)* • **2:** The target groups/geographic areas are appropriately specified, prioritising the excluded and/or marginalised. The project document states how beneficiaries will be identified, engaged and how meaningful participation will be ensured throughout the project. *(both must be true to select this option)* • **1:** The target groups/geographic areas are not specified, or do not prioritize excluded and/or marginalised populations. The project does not have a written strategy to identify or engage or ensure the meaningful participation of the target groups/geographic areas throughout the project. *Note: Management Action must be taken for a score of 1	3 | 2 1 *Select (all) targeted groups: (drop-down)* **Evidence** Page 22
4. Have knowledge, good practices, and past lessons learned of UNDP and others informed the project design? (select the option from 1-3 that best reflects this project): • **3:** Knowledge and lessons learned (gained e.g. through peer assist sessions) backed by credible evidence from evaluation, corporate policies/strategies, and monitoring have been explicitly used, with appropriate referencing, to develop the project's theory of change and justify the approach used by the project over alternatives. • **2:** The project design mentions knowledge and lessons learned backed by evidence/sources, which inform the project's theory of change but have not been used/are not sufficient to justify the approach selected over alternatives. • **1:** There is only scant or no mention of knowledge and lessons learned informing the project design. Any references that are made are not backed by evidence. *Note: Management Action or strong management justification must be given for a score of 1	3 | 2 1 **Evidence** Page 17
5. Does the project use gender analysis in the project design and does the project respond to this gender analysis with concrete measures to address gender inequities and empower women? (select the option from 1-3 that best reflects this project): • **3:** A participatory gender analysis on the project has been conducted. This analysis reflects on the different needs, roles and access to/control over resources of women and men, and it is fully integrated into the project document. The project establishes concrete priorities to address gender inequalities in its strategy. The results framework includes outputs and activities that specifically respond to this gender analysis, with indicators that measure and monitor results contributing to gender equality. *(all must be true to select this option)* • **2:** A gender analysis on the project has been conducted. This analysis reflects on the different needs, roles and access to/control over resources of women and men. Gender concerns are integrated in the development challenge and strategy sections of the project document. The results framework includes outputs and activities that specifically respond to this gender analysis, with indicators that measure and monitor results contributing to gender equality. *(all must be true to select this option)* • **1:** The project design may or may not mention information and/or data on the differential impact of the project's development situation on gender relations, women and men, but the constraints have not been clearly identified and interventions have not been considered. *Note: Management Action or strong management justification must be given for a score of 1	3 | 2 1 **Evidence** Page 37
6. Does UNDP have a clear advantage to engage in the role envisioned by the project vis-à-vis national partners, other development partners, and other actors? (select from options 1-3 that best reflects this project): • **3:** An analysis has been conducted on the role of other partners in the area where the project intends to work, and credible evidence supports the proposed engagement of UNDP and partners through the project. It is clear how results achieved by relevant partners will contribute to outcome level change complementing the project's intended results. If relevant, options for south-south and triangular cooperation have been considered, as appropriate. *(all must be true to select this option)* • **2:** Some analysis has been conducted on the role of other partners where the project intends to work, and relatively limited evidence supports the proposed engagement of and division of labour between UNDP and partners through the project. Options for south-south and triangular cooperation may not have not been fully developed during project design, even if relevant opportunities have been identified. • **1:** No clear analysis has been conducted on the role of other partners in the area that the project intends to work, and relatively limited evidence supports the proposed engagement of UNDP and partners through the project.	3 | 2 1 **Evidence** Page 10-11

There is risk that the project overlaps and/or does not coordinate with partners' interventions in this area. Options for south-south and triangular cooperation have not been considered, despite its potential relevance. *Note: Management Action or strong management justification must be given for a score of 1	
SOCIAL & ENVIRONMENTAL STANDARDS	
7. Does the project seek to further the realization of human rights using a human rights based approach? (select from options 1-3 that best reflects this project): • **3:** Credible evidence that the project aims to further the realization of human rights, upholding the relevant international and national laws and standards in the area of the project. Any potential adverse impacts on enjoyment of human rights were rigorously identified and assessed as relevant, with appropriate mitigation and management measures incorporated into project design and budget. *(all must be true to select this option)* • **2:** Some evidence that the project aims to further the realization of human rights. Potential adverse impacts on enjoyment of human rights were identified and assessed as relevant, and appropriate mitigation and management measures incorporated into the project design and budget. • **1:** No evidence that the project aims to further the realization of human rights. Limited or no evidence that potential adverse impacts on enjoyment of human rights were considered. *Note: Management action or strong management justification must be given for a score of 1	3 | 2 1 **Evidence** Page 45
8. Did the project consider potential environmental opportunities and adverse impacts, applying a precautionary approach? (select from options 1-3 that best reflects this project): • **3:** Credible evidence that opportunities to enhance environmental sustainability and integrate poverty-environment linkages were fully considered as relevant, and integrated in project strategy and design. Credible evidence that potential adverse environmental impacts have been identified and rigorously assessed with appropriate management and mitigation measures incorporated into project design and budget. *(all must be true to select this option)*. • **2:** No evidence that opportunities to strengthen environmental sustainability and poverty-environment linkages were considered. Credible evidence that potential adverse environmental impacts have been identified and assessed, if relevant, and appropriate management and mitigation measures incorporated into project design and budget. • **1:** No evidence that opportunities to strengthen environmental sustainability and poverty-environment linkages were considered. Limited or no evidence that potential adverse environmental impacts were adequately considered. *Note: Management action or strong management justification must be given for a score of 1	3 | 2 1 **Evidence** Page 1 Page 16
9. Has the Social and Environmental Screening Procedure (SESP) been conducted to identify potential social and environmental impacts and risks? The SESP is not required for projects in which UNDP is Administrative Agent only and/or projects comprised solely of reports, coordination of events, trainings, workshops, meetings, conferences and/or communication materials and information dissemination. [if yes, upload the completed checklist. If SESP is not required, provide the reason for the exemption in the evidence section.]	Yes | No
MANAGEMENT & MONITORING	
10. Does the project have a strong results framework? (select from options 1-3 that best reflects this project): • **3:** The project's selection of outputs and activities are at an appropriate level and relate in a clear way to the project's theory of change. Outputs are accompanied by SMART, results-oriented indicators that measure all of the key expected changes identified in the theory of change, each with credible data sources, and populated baselines and targets, including gender sensitive, sex-disaggregated indicators where appropriate. *(all must be true to select this option)* • **2:** The project's selection of outputs and activities are at an appropriate level, but may not cover all aspects of the project's theory of change. Outputs are accompanied by SMART, results-oriented indicators, but baselines, targets and data sources may not yet be fully specified. Some use of gender sensitive, sex-disaggregated indicators, as appropriate. *(all must be true to select this option)* • **1:** The results framework does not meet all of the conditions specified in selection "2" above. This includes: the project's selection of outputs and activities are not at an appropriate level and do not relate in a clear way to the project's theory of change; outputs are not accompanied by SMART, results-oriented indicators that measure the expected change, and have not been populated with baselines and targets; data sources are not specified, and/or no gender sensitive, sex-disaggregation of indicators. *Note: Management Action or strong management justification must be given for a score of 1	3 | 2 1 **Evidence** Page 48-53
11. Is there a comprehensive and costed M&E plan in place with specified data collection sources and methods to	Yes | No

support evidence-based management, monitoring and evaluation of the project?	(3)	(1)
12. Is the project's governance mechanism clearly defined in the project document, including planned composition of the project board? (select from options 1-3 that best reflects this project): • **3:** The project's governance mechanism is fully defined in the project composition. Individuals have been specified for each position in the governance mechanism (especially all members of the project board.) Project Board members have agreed on their roles and responsibilities as specified in the terms of reference. The ToR of the project board has been attached to the project document. *(all must be true to select this option)*. • **2:** The project's governance mechanism is defined in the project document; specific institutions are noted as holding key governance roles, but individuals may not have been specified yet. The prodoc lists the most important responsibilities of the project board, project director/manager and quality assurance roles. *(all must be true to select this option)* • **1:** The project's governance mechanism is loosely defined in the project document, only mentioning key roles that will need to be filled at a later date. No information on the responsibilities of key positions in the governance mechanism is provided. *Note: Management Action or strong management justification must be given for a score of 1	3 1 **Evidence** Page 59 Annex 5	2
13. Have the project risks been identified with clear plans stated to manage and mitigate each risks? (select from options 1-3 that best reflects this project): • **3:** Project risks related to the achievement of results are fully described in the project risk log, based on comprehensive analysis drawing on the theory of change, Social and Environmental Standards and screening, situation analysis, capacity assessments and other analysis. Clear and complete plan in place to manage and mitigate each risk. *(both must be true to select this option)* • **2:** Project risks related to the achievement of results identified in the initial project risk log with mitigation measures identified for each risk. • **1:** Some risks may be identified in the initial project risk log, but no evidence of analysis and no clear risk mitigation measures identified. This option is also selected if risks are not clearly identified and no initial risk log is included with the project document. *Note: Management Action must be taken for a score of 1	3 1 **Evidence** Annex 8	2
EFFICIENT		
14. Have specific measures for ensuring cost-efficient use of resources been explicitly mentioned as part of the project design? This can include: i) using the theory of change analysis to explore different options of achieving the maximum results with the resources available; ii) using a portfolio management approach to improve cost effectiveness through synergies with other interventions; iii) through joint operations (e.g., monitoring or procurement) with other partners.	Yes (3)	No (1)
15. Are explicit plans in place to ensure the project links up with other relevant on-going projects and initiatives, whether led by UNDP, national or other partners, to achieve more efficient results (including, for example, through sharing resources or coordinating delivery?)	Yes (3)	No (1)
16. Is the budget justified and supported with valid estimates? • **3:** The project's budget is at the activity level with funding sources, and is specified for the duration of the project period in a multi-year budget. Costs are supported with valid estimates using benchmarks from similar projects or activities. Cost implications from inflation and foreign exchange exposure have been estimated and incorporated in the budget. • **2:** The project's budget is at the activity level with funding sources, when possible, and is specified for the duration of the project in a multi-year budget. Costs are supported with valid estimates based on prevailing rates. • **1:** The project's budget is not specified at the activity level, and/or may not be captured in a multi-year budget.	3 1 **Evidence** Page 65	2
17. Is the Country Office fully recovering its costs involved with project implementation?	3 1	2

• **3:** The budget fully covers all direct project costs that are directly attributable to the project, including programme management and development effectiveness services related to strategic country programme planning, quality assurance, pipeline development, policy advocacy services, finance, procurement, human resources, administration, issuance of contracts, security, travel, assets, general services, information and communications based on full costing in accordance with prevailing UNDP policies (i.e., UPL, LPL.) • **2:** The budget covers significant direct project costs that are directly attributable to the project based on prevailing UNDP policies (i.e., UPL, LPL) as relevant. • **1:** The budget does not reimburse UNDP for direct project costs. UNDP is cross-subsidizing the project and the office should advocate for the inclusion of DPC in any project budget revisions. *Note: Management Action or strong management justification must be given for a score of 1	**Evidence** Page 65
EFFECTIVE	
18. Is the chosen implementation modality most appropriate? (select from options 1-3 that best reflects this project): • **3:** The required implementing partner assessments (capacity assessment, HACT micro assessment) have been conducted, and there is evidence that options for implementation modalities have been thoroughly considered. There is a strong justification for choosing the selected modality, based on the development context. *(both must be true to select this option)* • **2:** The required implementing partner assessments (capacity assessment, HACT micro assessment) have been conducted and the implementation modality chosen is consistent with the results of the assessments. • **1:** The required assessments have not been conducted, but there may be evidence that options for implementation modalities have been considered. *Note: Management Action or strong management justification must be given for a score of 1	3 | 2 1 **Evidence** Annex 9
19. Have targeted groups, prioritizing marginalized and excluded populations that will be affected by the project, been engaged in the design of the project in a way that addresses any underlying causes of exclusion and discrimination? • 3: Credible evidence that all targeted groups, prioritising marginalized and excluded populations that will be involved in or affected by the project, have been actively engaged in the design of the project. Their views, rights and any constraints have been analysed and incorporated into the root cause analysis of the theory of change which seeks to address any underlying causes of exclusion and discrimination and the selection of project interventions. • 2: Some evidence that key targeted groups, prioritising marginalized and excluded populations that will be involved in the project, have been engaged in the design of the project. Some evidence that their views, rights and any constraints have been analysed and incorporated into the root cause analysis of the theory of change and the selection of project interventions. • 1: No evidence of engagement with marginalized and excluded populations that will be involved in the project during project design. No evidence that the views, rights and constraints of populations have been incorporated into the project.	3 | 2 1 **Evidence** Page 36 Annex 13
20. Does the project conduct regular monitoring activities, have explicit plans for evaluation, and include other lesson learning (e.g. through After Action Reviews or Lessons Learned Workshops), timed to inform course corrections if needed during project implementation?	Yes (3) | No (1)
21. The gender marker for all project outputs are scored at GEN2 or GEN3, indicating that gender has been fully mainstreamed into all project outputs at a minimum. *Note: Management Action or strong management justification must be given for a score of "no"	Yes (3) | No (1) **Evidence**
22. Is there a realistic multi-year work plan and budget to ensure outputs are delivered on time and within allotted resources? (select from options 1-3 that best reflects this project): • **3:** The project has a realistic work plan & budget covering the duration of the project *at the activity* level to ensure outputs are delivered on time and within the allotted resources. • **2:** The project has a work plan & budget covering the duration of the project at the output level. • **1:** The project does not yet have a work plan & budget covering the duration of the project.	3 | 2 1 **Evidence** Page 65
SUSTAINABILITY & NATIONAL OWNERSHIP	
23. Have national partners led, or proactively engaged in, the design of the project? (select from options 1-3 that best reflects this project): • **3:** National partners have full ownership of the project and led the process of the development of the project jointly with UNDP. • **2:** The project has been developed by UNDP in close consultation with national partners.	3 | 2 1 **Evidence** Annex 13

• **1:** The project has been developed by UNDP with limited or no engagement with national partners.		
24. Are key institutions and systems identified, and is there a strategy for strengthening specific/ comprehensive capacities based on capacity assessments conducted? (select from options 0-4 that best reflects this project): • **3:** The project has a comprehensive strategy for strengthening specific capacities of national institutions based on a systematic and detailed capacity assessment that has been completed. This strategy includes an approach to regularly monitor national capacities using clear indicators and rigorous methods of data collection, and adjust the strategy to strengthen national capacities accordingly. • **2.5:** A capacity assessment has been completed. The project document has identified activities that will be undertaken to strengthen capacity of national institutions, but these activities are not part of a comprehensive strategy to monitor and strengthen national capacities. • **2:** A capacity assessment is planned after the start of the project. There are plans to develop a strategy to strengthen specific capacities of national institutions based on the results of the capacity assessment. • **1.5:** There is mention in the project document of capacities of national institutions to be strengthened through the project, but no capacity assessments or specific strategy development are planned. • **1:** Capacity assessments have not been carried out and are not foreseen. There is no strategy for strengthening specific capacities of national institutions.	3 2 1 **Evidence** Page 16-17 Annex 12	2.5 1.5
25. Is there is a clear strategy embedded in the project specifying how the project will use national systems (i.e., procurement, monitoring, evaluations, etc.,) to the extent possible?	Yes (3)	No (1)
26. Is there a clear transition arrangement/ phase-out plan developed with key stakeholders in order to sustain or scale up results (including resource mobilisation strategy)?	Yes (3)	No (1)

Annex 8:

UNDP Risk Log

Project Title: Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi	**Award ID:** 00089107	**Date: 30 Nov. 2016**

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Mngt response	Owner	Submitted, updated by	Last Update	Status
To delete this row later	Enter a brief description of the risk *(In Atlas, use the Description field. **Note: This field cannot be modified after first data entry)***	When was the risk first identified *(In Atlas, select date. Note: date cannot be modified after initial entry)*	Environmental Financial Operational Organizational Political Regulatory Strategic Other Subcategories for each risk type should be consulted to understand each risk type (see Deliverable Description for more information) *(In Atlas, select from list)*	Describe the potential effect on the project if this risk were to occur Enter probability on a scale from 1 (low) to 5 (high) P = Enter impact on a scale from 1 (low) to 5 (high) I = *(in Atlas, use the Management Response box. Check "critical" if the impact and probability are high)*	What actions have been taken/will be taken to counter this risk *(in Atlas, use the Management Response box. This field can be modified at any time. Create separate boxes as necessary using "+", for instance to record updates at different times)*	Who has been appointed to keep an eye on this risk *(in Atlas, use the Management Response box)*	Who submitted the risk *(In Atlas, automatically recorded)*	When was the status of the risk last checked *(In Atlas, automatically recorded)*	e.g. dead, reducing, increasing, no change *(in Atlas, use the Management Response box)*

1.	Political tension between ethnic minority groups and the central government and resultant refugee and internal displaced persons camps along the Thai border may limit ability to implement project activities effectively.	30 Nov. 2016	Political	This risk would potentially block access to project demonstration areas, delaying or stopping those aspects of project implementation. It could also impact plans for establishing and managing new protected areas. PIF: Medium - High P = 3 I = 3 Medium	The national government and the Karen National Union (KNU) signed a peace agreement in 2012. Conservation officers will be trained in conflict resolution.	*Project Manager*			*reducing*
2.	Relevant government agencies at national and regional levels may be reluctant to promote conservation-oriented land-uses for a fear of losing other development revenues from the overwhelmingly large business and investment interests by local and foreign companies, compounded by corruption.	30 Nov. 2016	*Strategic*	Proposals for extending the PA network may not succeed and forested land would be converted for plantations and mining concessions. Sector-dominated land use management would prevail, including unsustainable fishery practices. PIF – Medium P = 3 I = 3 Medium	Working closely with relevant government agencies, the project aims to influence the national development and fiscal development planning process, through mainstreaming biodiversity and PA system objectives. The project will support greater transparency in decision-making for land allocation and concession and business interest management.	*Project Manager*			*reducing*
3	The private and business sector associations may be reluctant to collaborate with conservation initiatives, fearing	30 Nov. 2016	*Strategic*	This would result in further deforestation, loss of forest connectivity and ecosystem services. On the marine side, unsustainable fishery practices and related revenue leakage	The project will support development and application of a range of tools, including maps (overlay of HVCF, KBAs, carbon density,	*Project Manager*	*Strong / increasing interest in plantation development and other business*		*reducing*

	loss of business and revenue expansion opportunities. Lack of cooperation from the private sector may influence government planning and allow the expansion of sector-dominated land uses to occur.			would continue. PIF – Medium P = 3 I = 2 Low	land use patterns, regional forest and deforestation analysis) and targeted biodiversity and ecosystem valuation work including targeted scenario analysis as appropriate. The process will be done with full participation of the stakeholders including the private sector, fostering understanding of the need for and benefit from striking the right balance between development and safeguarding of biodiversity.		*investment opportunities*		
4	Opening of the Dawei Seaport and Development Corridor will cause negative impacts on biodiversity.	30 Nov. 2016	*strategic*	Opening of Dawei seaport will impact a large tract of landscapes / coastal areas due to rapid economic development and improved accessibility through a new road linking Dawei and Thailand. PIF – Medium P = 3 I = 3 Medium	This risk will not direct affect the whole project areas except Moscos Island Marine PA. The project will explore ways to capitalize on the infrastructure development and existence of large businesses in the region. The project will seek to develop partnerships with the private sector companies to draw in their support for conservation, such as establishment of offset mechanisms. The project will closely collaborate with WWF Myanmar, which	*Project Manager*			*No Change*

					provides targeted support for green infrastructure development over the corridor to minimize the ecological barriers and fragmentation. The project approach to integrate natural capital values and biodiversity conservation in land use planning and management is a direct response to management of this type of risk.				
5	Major private sector stakeholders continue business as usual rather than adopting RSPO principles for sustainable plantation development. Management of existing plantations would not prioritize habitat protection or rehabilitation or measures to support wildlife populations.	30 Nov. 2016	*Strategic*	Development of new plantations would result in landscape-level forest clearance with no HCVF, buffer zones, etc left. PIF – Medium P = 2 I = 2 Low	All key decision makers have expressed their commitment to support the improvement of plantation practices towards achieving RSPO certification. The project will support an active stakeholder dialogue to change behaviour and mitigate risks.	*Project Manager*	*Strong / increasing interest in plantation development, but new regional government interested in sustainability*		*Likely decrease*
6.	Climate change may undermine the conservation objectives of the project in both terrestrial and marine ecosystems.	30 Nov. 2016	*Environmental*	The most immediate climate change related risk is of prolonged elevated seawater temperatures associated with El Nino conditions with the capacity to devastate coral reefs, and possibly seagrass beds & mangroves. Other climate change impacts are less	the project will contribute to the maintenance of ecosystem resilience under differing climate change conditions, so as to secure a continued sustainable flow of ecosystem services. In particular for marine	*Project Manager*			*Likely increase*

				abrupt and would have little direct impact on project outcomes. PIF – Medium P = 3 I = 3 Medium	ecosystem resilience, the project will support measures to strengthen coral reef monitoring, including climate induced bleaching and other impacts, as well as capacity to minimise and respond to those impacts.				

Annex 9:

Results of Capacity Assessment of the Project Implementing Partner and HACT Micro Assessment

- N/A -

Annex 10:
Additional Agreement
-Co-financing letters

United Nations Development Programme

Empowered lives.
Resilient nations.

Ref: UNDP/CD/2016-173 1st December, 2016

Dear Ms. Adriana Dinu,

UNDP Co-Financing to the GEF project "Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi"

I am hereby pleased to confirm UNDP contribution of US $ 6.613 million to the co-financing of the above-mentioned project, being submitted to the GEF Secretariat for the final endorsement. This co-financing can be broken-down as follow:

1. UNDP Core Fund US $ 2.613 million allocated for environmental conservation for the period of 2017-2022.
2. UNDP Core Fund US $ 1 million allocated for local development planning, capacity building of Civil Society Organizations and peace building and social cohesion support during 2017-2022.
3. The amount of US $ 3 million which is mobilized from UN REDD Programme for implementation of Myanmar REDD+ Readiness Roadmap during 2017-2020.

We look forward to the approval of the GEF project and will remain fully supportive of its implementation.

Yours Sincerely,

Peter Batchelor
Country Director

Ms. Adriana Dinu
Executive Coordinator
UNDP/GEF, New York, USA

The Government of the Republic of the Union of Myanmar
Ministry of Natural Resources and Environmental Conservation
Forest Department
Nay Pyi Taw
Email-- irfdmyanmar@gmail.com, nnkforest@gmail.com

Nay Pyi Taw, *the 3 of November, 2016*
Letter No. U-Yin-project/UNDP-GEF6/5 888/2016

To
Ms. Adriana Dinu

Officer-in-Charge and Deputy Executive Coordinator

UNDP- Global Environment Facility

United Nations Development Programme

304 East 45th Street, FF914, New York, NY 10017, United States of America

Subject: Co-Financing Commitment Letter for the Project on " Ridge to Reef: Integrated Protected Area Land and Seascape Management in Taninthayi "

Dear Ms. Adriana Dinu,

We would like to inform you that Myanmar has developed a project document on " Ridge to Reef: Integrated Protected Area Land and Seascape Management in Taninthayi " to secure funding under GEF-6.

In this regard, as part of our commitment as the leading agency to execute this project alongside other agencies, our Ministry will provide in-kind contribution of USD 3,000,000 as co-financing to support the successful implementation of the project.

We believe that this project will contribute Myanmar to strengthen construction in Key Biodiversity Area in both marine and terrestrial landscapes and improve the status of biodiversity and ecosystems services through enhanced representativeness, capacity building, monitoring, enforcement and sustainable financing options.

With best regards,

Nyi Nyi Kyaw, PhD
Director General

WILDLIFE CONSERVATION DIVISION FOREST DEPARTMENT NATURE AND
Letter No. 5 888
Date 3. 11. 2016
NAYPYITAW CITY

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

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စာအမှတ်၊ ဥယျာဉ်-စမက/UNDP-GEF6/၅၈၃/၂၀၁၆

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Environmental Governance and Disaster Resilienece၊ UNDP

ရန်ကုန်မြို့

အကြောင်းအရာ။ **Co-finance Commitment Letter တောင်းခံခြင်းကိစ္စ**

ရည်ညွှန်းချက် ။ UNDP မှ ဒေါ်လတ်လတ်အေး၏ ၂၇-၁၀-၂၀၁၆ ရက်စွဲပါ စာအမှတ်၊ UNDP/ENV/PAS/2016/098

ရည်ညွှန်းပါစာဖြင့် တောင်းခံလာသည့် ကုလသမဂ္ဂဖွံ့ဖြိုးမှုအစီအစဉ် (UNDP) မှ ကမ္ဘာ့ပတ်ဝန်းကျင်ဆိုင်ရာ အထောက်အပံ့အဖွဲ့ (Global Environment Facility-GEF) သို့ တင်ပြမည့် တနင်္သာရီအဏ္ဏဝါဒေသမှသည် တောင်တန်းများအထိ သဘာဝနယ်မြေ ဘက်စုံစီမံခန့်ခွဲမှု စီမံကိန်း (Ridge to Reef: Integrated Protected Area Land and Seascape Management in Taninthayi project) အဆိုပြုလွှာတင်ပြရာတွင် ပူးတွဲဖော်ပြရမည့် သစ်တောဦးစီးဌာန၏ Co-finance Commitment Letter အား ပေးပို့အပ်ပါသည်။

ညွှန်ကြားရေးမှူးချုပ် (ကိုယ်စား)

[ဝင်းနိုင်သော်၊ ညွှန်ကြားရေးမှူး၊ (ဝန်းကျင်/သားငှက်ဌာန)]

THE GOVERNMENT OF REPUBLIC OF THE UNION OF MYANMAR

TANINTHARYI REGION GOVERNMENT

Dawei, Tanintharyi Region

Date: 30th November 2016

To

Ms. Adriana Dinu
GEF Executive Coordinator
UNDP - Global Environment Facility
United Nations Development Programme
304 East 45th Street, FF914
New York, NY 10017
United States of America

Subject: **Co-Financing Commitment Letter for the Project "Ridge to Reef: Integrated Protected Area land and Seascape Management in Tanintharyi"**

Tanintharyi Regional Government is pleased to inform you that Myanmar has developed a project entitled "Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi". The Executing Agency of the project is UNDP while the lead Executing Partner is the Union Ministry of Natural Resources and Environmental Conservation and Tanintharyi Regional Government as an Executing Partner.

Tanintharyi Regional Government is very pleased to render its collaboration and support to the Union Ministry and UNDP throughout the project formulation, insecuring financial resources from GEF and in the project implementation, since the project aims to secure the long-term protection of key biodiversity areas through integrated planning and management of the protected area land and seascape in Tanintharyi Region of Myanmar. In this regard, as part of its commitment as anExecuting Partner, Tanintharyi Regional Government affirms to contribute a total of USD 3,000,000 as co-financing (in-kind) to the successful implementation of the project.

We believe that this project will contribute substantially to strengthen Key Biodiversity Areas in both marine and terrestrial landscapes and improve the status of biodiversity and ecosystems services through enhanced representation, capacity building, management effectiveness, monitoring, enforcement and financing.

We sincerely thank GEF and UNDP for your kind support in complementing our national and regional efforts and commitment in relevant global environmental convention.

Yours Sincerely,

Le Le Maw (Dr.)
Chief Minister
Tanintharyi Regional Government
Dawei, Tanintharyi Region
Myanmar

Smithsonian Institution

Office of Sponsored Projects

30 November 2016

Ms. May Nwe Soe
United Nations Development Programme, Myanmar
No 6 Natmauk Road, Tamwe Township
P. O. Box 650 Yangon 11211, Myanmar

Re: Smithsonian Institution Co-Financing to the GEF project "Integrated Protected Area Land and Seascape Management in Tanintharyi"; Smithsonian PI(s): Melissa Songer, Peter Leimgruber, Stephen Box, Steven Monfort

Dear Ms. May Nwe Soe:

We are hereby pleased to confirm our expected contribution of US $ 1.5 million to the co-financing of the above-mentioned project, being submitted to the GEF Secretariat for the final endorsement. This co-financing can be broken-down as follow:

1. The amount of US $950,000 which is planned to be mobilized during 2017-2019 to build capacity for biodiversity management/monitoring and conservation planning/activities, for improving the sustainability of biodiversity and natural resources in the Tanintharyi, Myanmar.
2. The amount of US $ 150,000 allocated for local development planning, capacity building of Civil Society Organizations and livelihood support during 2017.
3. The amount of US $265,000 allocated that will cover time of federal employees involved in activities related to the project during 2017-2022.
4. The amount of US $135,000 allocated that will cover time of trust employees involved in activities related to the project during 2017-2022.

Smithsonian's role in this larger project will involve developing institutional capacity for the generation and application of biodiversity knowledge at national and subnational levels. We will help to develop a system biodiversity information management. In building national and local capacity we will use a range of training programs and methods developed by Smithsonian scientists. Working from detailed capacity needs assessments, the capacity of national and local government agencies, research institutions and national CSOs will be strengthened in the areas of biodiversity assessment and monitoring, environmental planning and management for development, and utilization of open access methods and tools to design, implement and evaluate projects. We are expecting a total of $1.2 million in funding from GEF (for the years 2017-2022) in support of our planned activities.

We look forward to the approval of the GEF project and will remain fully supportive of its implementation. Questions of a technical or programmatic nature should be addressed to Dr. Melissa Songer at 540/635-6534 or songerm@si.edu. Administrative or business questions should be directed to Violet Jones-Bruce of this office at 202/633-7098 or violet@si.edu.

Yours Sincerely,

Tracey Fraser
Director, Office of Sponsored Projects

cc: Melissa Songer
Peter Leimgruber
Steven Monfort

For US Mail:
P.O. Box 37012, MRC 1205
Washington, DC 20013-7012
202.633.7110 Telephone
202.633 7119 Fax

For Overnight Delivery:
2011 Crystal Drive, Suite 352
Arlington, VA 22202

FAUNA & FLORA INTERNATIONAL

Ms. Adriana Dinu
Executive Coordinator
UNDP - Global Environment Facility
304 East 45th Street, FF914
New York, NY 10017
United States of America

December 2, 2016

Dear Ms. Dinu,

Subject: Fauna & Flora International co-financing commitment for the project "Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi"

As part of our commitment as responsible partner alongside UNDP and other agencies for the execution of the project "Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi", Fauna & Flora International is pleased to confirm the expected contribution of US$ 2,425,116 to the co-financing of the above-mentioned project, being submitted to the GEF Secretariat for the final endorsement.

We believe that this project will contribute substantially to strengthen landscape and seascape level biodiversity conservation and integrated protected area management in Tanintharyi Region.

Yours sincerely,

Svetlana Ignatieva
Chief Operating Officer

Annex 11:

-Lenya Profile

-Ngawun Landscape Profile
-R2R Seascape Profile
-See separated file –

Annex 12a:
Capacity Development Scorecards

-Integrated Land and Seascape Management Scorecard – Tanintharyi Regional Government

Capacity Development Scorecard for Integrated Landscape / Seascape Management (ILSM)

Assessment Unit: Tanintharyi Regional Government (collectively)

Date of Assessment: 26 August 2016

Assessors: Secretary of the Tanintharyi Regional Government, U Win Shein (Deputy Director General, General Administration Department)

Dr. Michael Green, International Consultant

U Win Hlaing, National Consultant

U Soe Tint, Assistant Director, Dawei District, Tanintharyi Region.

Introduction

This scorecard has been designed specifically for this project, as a tool to measure success in terms of developing regional capacity to mainstream biodiversity conservation and ecosystem service considerations into Integrated Landscape and Seascape Management (ILSM) including production sectors, such as forestry, fisheries, mining, tourism, agriculture and plantations, transportation and port development, rural development, energy and water resources. While the majority of the scorecard assesses regional capacity for integrated management of landscapes and seascapes (not necessarily together), the integrated management of land *together with* coastal / marine areas (i.e. recognizing the biophysical connections between these environments) as part of a holistic approach also requires attention, and this has been noted in a number of assessment questions.

The scorecard is conceptually based on the UNDP Capacity Development Scorecard for Protected Area Management, but has been adapted for ILSM, with a focus on biodiversity mainstreaming into regional planning and individual sectors. The indicator questions in the table are scored from 0 (worst) to 3 (best), with an explanation of what each score represents for each question. It includes baseline (PPG stage) and target (project completion) scores and the assessment should be repeated at project mid-term and project completion to track progress towards the targets. In addition to this scorecard, note that the UNDP CD Scorecard on PAs will be applied to Tanintharyi regional Forest Department, and Tanintharyi regional Dept of Fisheries.

Assessment Questions*

Q. No.	Strategic Area of Support	Question	Baseline Score (0-3)	Target Score (0-3)	Mid-Term Score (0-3)	Explanatory Comments for Current Assessment (Baseline)
1.	Capacity to conceptualize and formulate policies, legislations, strategies and programmes	Does a policy basis exist for mainstreaming biodiversity and ecosystem services (ES) into Integrated Landscape and Seascape Management (ILSM)? (0 -No; 1- policy only requiring attention to environmental concerns in sector planning; 2 – policy requiring inter-agency coordination to achieve biodiversity and ES mainstreaming in ILSM in prep; 3 – policy requiring inter-agency coordination to achieve biodiversity and ES mainstreaming in ILSM approved)	1	2		The National Land Use Policy (Jan 2016 draft) has provision for establishing a National Land Use Council, which will establish Land Use Committees in all regions, states and Union Territory, having the Chief Minister as its Chairman. Each region etc will establish Self-administered Division or Self-administered Zone Land Use Committees and District Land Use Committees, Township Land Use Committees, Village-tract or Ward Land Use Committees with appropriate representation (see paragraph 10(b). Thus, it will be important for both this project and My Coast to work within or link to these proposed structures/mechanisms. As of August 2016, there is no policy for mainstreaming Ecosystem Services into ILSM. There is a "National Environmental Conservation Committee (ECC)" and

						"Vacant, Fallow and Virgin lands Management Committee" at Union Level, State/region level down to District, Township, Village tract and village level. The secretary of the NECC is from Forest Department. The Vacant, Fallow and Virgin lands management committee is chaired by GAD and secretary is from Settlements and Land Records Department. State/Regional Committee has authority to allow up to 50 acres (±20.24ha) of vacant, fallow and virgin land for agriculture purpose. The objective is to achieve harmony and balance between economic development and environmental conservation across multiple sectors via the coordination efforts of the committees. The frequency of the meeting is twice per month at District, once per week at Township and twice per month at village tract and village level.
2.	Capacity to conceptualize and formulate policies, legislations, strategies and programmes	Does a policy basis exist for integrating land with coastal / marine management, including recognition of the biophysical connections between these environments, such as river flows, sedimentation, nutrient enrichment, pollution, coastal dynamics and sea level rise? (0 – No recognition of land-sea connections in existing policies; 1 – policies reflect the need for integrated management of land and seascapes without connections; 2 – land-sea connections are reflected in some policies but are not comprehensive; 3 - land-sea connections are comprehensively reflected in holistic policy)	0	2		There is no recognition of land-coast-sea connections in existing policies except for temporary ad hoc coordination committees led by concerned ministries on a case by case basis.
3.	Capacity to conceptualize and formulate policies, legislations, strategies and programmes	Is there a legal mandate and regulatory framework for ILSM (indicate for landscapes, seascapes and the connections between them)? (0 – No; 1 – legal requirements exist only for attention to environmental concerns in sector planning; 2 – law to establish inter-agency coordination for ILSM approved; 3 –regulations to implement inter-agency	0	2		As above. The Constitution (2008) provides an overarching framework for protecting and conserving the natural environment, the Constitution (2008) states: "The Union shall protect and conserve the natural environment" (article 45). It also states: "Every citizen shall assist in environmental conservation." (article 390) There is no specific mention of land, sea of the link between them.

		coordination for ILSM approved and operational)				
4.	Capacity to implement policies, legislation, strategies and programmes	Is there a permanent coordinating body mandated to implement ILSM (indicate for landscapes, seascapes and the connections between them)? (0 – No; 1 – coordinating body appointed but only temporary or not functional; 2 – permanent coordinating body operational but with functional limitations; 3 – coordinating body operational, has annual workplan targets and reports annually on progress to regional government)	0	2		No permanent body, only temporary inter-agency task forces on specific issues. See draft Land Use Policy above – this includes a mandated body for land use, but not with the specific provision of ILSM. General Administration Department is responsible to lead and coordinate as inter-agency task forces under the regional government. (According to the Constitution, GAD is under the control of Ministry of Home Affairs where the Minister is directly assigned by Military. Up to August 2016, it is now proceeding to issue official instructions to be administered by State/Regional Government.)
5.	Capacity to implement policies, legislation, strategies and programmes	Does the coordinating body have an annual operating budget? (0 – No; 1 – yes, but this is only sufficient to meet selected workplan targets; 2 – yes, sufficient to meet most workplan targets; 3 – yes, sufficient for full implementation of annual workplan	0	2		No - there is no coordinating body.
6.	Capacity to implement policies, legislation, strategies and programmes	Are ILSM requirements incorporated into sector agency plans (indicate for landscapes, seascapes and the connections between them)? (0 – No; 1 – unsystematic, ad hoc attention to inter-sectoral issues; 2 – relatively systematic attention to inter-sectoral issues; 3 – full systematic attention to inter-sectoral issues including formalized coordination arrangements)	0	2		No. It is envisaged that an increasing level of authority and responsibility will be decentralized to the regional and state governments, including natural resource management.
7.		Are ILSM requirements including biodiversity and ES mainstreamed into development planning (indicate for landscapes, seascapes and the connections between them)? (0 – No; 1 – unsystematic and ad hoc, only including legally mandated environmental safeguards; 2 – relatively systematic attention to ILSM requirements but not fully taking biodiversity and ES into account; 3 – full systematic	0	2		Not beyond weak existing EIA procedures, with possible exception of WWF green economy support for Dawei development corridor. There is an Environmental Conservation Department (ECD) in Tanintharyi Region and it needs to cooperate and coordinate among General Administration Department (GAD), Forest Department (FD), Environmental Conservation Department (ECD), Department of Fisheries (DoF), Port Authority, Rural Development, Water Resources Department and other related

		mainstreaming of ILSM issues including formalized screening for biodiversity and ES (HCVF, HCSF, threatened species, etc) in planning procedures)				departments. There is a Planning Department under the Regional Government for development planning.
8.		Are ILSM requirements incorporated into EIA/ESIA procedures for development projects (indicate for landscapes, seascapes and the connections between them)? (0 – No; 1 – EIA/ESIA procedures are applied but with little attention to avoidance or mitigation of development impacts; 2 – EIA/ESIA procedures take into account available biodiversity and ES knowledge and include avoidance and mitigation measures; 3 – proactive measures are taken to avoid impacts on biodiversity and ES through SEA and detailed EIA/ESIA procedures for projects in environmentally sensitive areas	1	3		See above - existing EIA procedures are weak and generally have little influence on the E&S impacts of development projects (eg oil palm plantation development)
9.	Capacity to mobilize information and knowledge	What information on biodiversity, ES and socio-economic vulnerability exists to support regional planning? (0 – Information is virtually lacking; 1 – some information exists but is of poor quality and/or limited coverage of geographic and thematic subjects; 2 – adequate information exists and is mostly of good quality, but gaps remain in quality, coverage and/or updating; 3 – good quality information exists covering required geographical and thematic subjects and is updated to support planning purposes)	1	3		This has been a gap, but biodiversity assessments by universities and NGOs working with agencies have now made significant information available on certain areas and species groups for both terrestrial and coastal/marine environments. There remains limited institutional and human resource capacity and limited experience. List of website addresses from which such information is available: www.myanmarbiodiversity.org www.fauna-flora.org www.banca-env.org www.istituto-oikos.org www.smithsonianmag.com www.fdmoecaf.gov.mm www.aseanbiodiversity,org www.asean-wen.org www.cbd.int
10.	Capacity to mobilize information and knowledge	Is information on biodiversity, ES and socio- economic vulnerability available in a useful form to support regional planning? (0 – No information is available in a useable form; 1 – limited	1	3		See above - some information is available from university and NGO activities, however, this is patchy and not consistently available in an accessible form for regional government use - although some have supported Forestry

		information is available in a useable form but not readily accessible; 2 – adequate information is available in a useable form and is accessible, but some challenges remain; 3 – a wide range of adequate information exists in a useable form and is readily accessible)				and Fisheries Dept planning.
11.	Capacity to mobilize information and knowledge	Is information on the biophysical connections between land and sea environments available in a useful form to support regional planning (such as river flows, sedimentation, nutrient enrichment, pollution, coastal dynamics and sea level rise)? (0 – No information is available in a useable form; 1 – limited information is available in a useable form but not readily accessible; 2 – adequate information is available in a useable form and is accessible, but some challenges remain; 3 – a wide range of adequate information exists in a useable form and is readily accessible)	1	3		As above - some information is available, however this is patchy and not consistently available in an accessible form for regional government use
12.	Capacity to mobilize information and knowledge	Do regional planning authorities have the capacity to make use of available information on biodiversity, ES and socio-economic vulnerability in planning processes? (0 – There is no mechanism for taking account of such information; 1 – the information is only used in an ad hoc, non-systematic manner; 2 – a systemic approach exists for making use of such information but is not effectively utilized; 3 – a systemic approach is utilized to good effect)	0	2		National Planning Department at regional govt. mainly focuses on regional development plan. Limited institutional and human resource capacity, limited experiences to make use of available information on biodiversity, ES and socio-economic vulnerability in planning processes.
13.	Capacity to engage and build consensus among all stakeholders	Have sectoral agencies established the partnerships needed to achieve mainstreaming of biodiversity and ES in ILSM practices? (0 – Sectoral agencies operate in isolation; 1 – some partnerships are in place but there are significant gaps, and existing partnerships achieve little; 2 –	1	3		There are regular meetings at District and Township level led by GAD, down to village tract head and it needs to enhance and mainstream the practices. The frequency of the meetings is twice per month at District, once per week at Township and twice per month at village tract and village level.

		many partnerships are in place with a wide range of stakeholders, but gaps remain and partnerships have limited effectiveness; 3 – effective partnerships established with a wide range of stakeholders to enable effective mainstreaming of biodiversity and ES in ILSM practices)				
14.	Capacity to engage and build consensus among all stakeholders	Do ILSM plans for Tanintharyi Region (incl. sectoral plans) have the political commitment required for effective implementation? (0 - There is no political will at all, or worse, the prevailing political will runs counter to the interests of mainstreaming biodiversity into sectoral plans; 1 - Some political will exists, but is not strong enough to make a difference; 2 - Reasonable political will exists, but is not always strong enough to fully support mainstreaming of biodiversity into sectoral plans; 3 - There are very high levels of political will to support mainstreaming of biodiversity into sectoral plans in Tanintharyi Region)	1	3		Political commitment/will of the new regional government is becoming stronger, especially to progress environmental conservation and address problems such as: Land grabbing by palm oil companies; Water pollution by fish meal factories; Charcoal production from mangroves; Illegal gold mining. Enhancing and awareness raising of ILSM plans (incl. sectoral plans) will ensure the political will at regional level required for effective implementation.
15.	Capacity to monitor, evaluate, report and learn	Do the regional government institutions engaged in ILSM have effective internal mechanisms for monitoring, evaluation, reporting and learning on biodiversity mainstreaming? (0 – No internal mechanisms exist for monitoring, evaluation, reporting or learning; 1 - There are some mechanisms for monitoring, evaluation, reporting and learning but they are limited and weak; 2 - Reasonable mechanisms for monitoring, evaluation, reporting and learning are in place but are not as strong or comprehensive as they could be; 3 - Institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning.	0	2		There is no existing internal mechanism.
		TOTAL SCORE	**7**	**36**		

Annex 12bc:

-PA Administration Scorecard - Tanintharyi Regional Forest Department

- **PA Administration Scorecard -** Tanintharyi Regional Department of Fisheries

-See separated file-

Annex 13:

List of People Consulted during Project Development

-See separated file-

Annex 14:
Socio-economic and Gender Situational Analysis on Tanintharyi Landscape, Seascape and Coastal area

Report prepared for

Ridge to Reef: Integrated protected area land and seascape management in Tanintharyi

Naw Eh Mwee @ Naw Eh Mwee Aye Wai

National Community and Gender Specialist
(National Consultant)

September 2016

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Map showing illegal tenants residing inside and outside of PA

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II. LIST OF ACRONYMS AND ABBREVIATION

ABSDF	All Burma Student Democratic Front
CDD	Community Driven Development
CF	Community Forestry
CSR	Cooperate Social Responsibility
FD	Forest Department
FFI	Fiona and Floral Institute
FGD	Focus Group Discussion
FHH	Female Headed Household
GAD	General Administrative Department
GONGO	Government Organized Non Government Organization
HH	Household
HHH	Head of Household
K	Kyat
KNU	Karen National Union
LMMA	Locally Managed Marine Area
MADB	Myanma Agriculture Development Bank
MALI	Ministry of Agriculture, Livestock and Irrigation
MGN	Myanmar Green Network
MoE	Ministry of Education
MoHA	Ministry of Home Affaire
MP	Member of Parliament
NC	National Consultant
NLD	National League for Democracy
NRC	National Registration Card
OHHH	One Hundred Household Head
PA	Protected Area
THHH	Ten Household Head
VSPS	Village support primary school
VTA	Village Tract Administrator

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Socio-economic and Gender Situational Analysis of Tanintharyi Landscape, Seascape and Coastal area

1. INTRODUCTION

The overall Project Preparation Document aims to provide a descriptive picture of socioeconomic situation in the proposed project area. It will examine different livelihood strategies and activities, how the social and institutional features of community life that affect to people's livelihoods choices. It will also examine how the community can participate in the CBNRM and their incentive towards being part of CBNRM. Through this, community involvement plan and gender mainstreaming plan will develop.

A. Methodology

Survey questionnaires were prepared before the field trips with amendment depend on need. (14) FGD has conducted in 14 villages, and in each FGD, minimum 3 participants to maximum was 24 participants were participated, even though it limit to 10 to 12 with equal participation of both male and female. Informal talk with concern persons has conducted that include civil servant household member and some key person from Yangon. Transact walk in villages were carry out in every visited villages. Data triangulation also conducted with NC. In each and every trip, two to three team members were participated, NC3 with NC2 (for seascape) or NO1 (for landscape) with support from FD of Myeik and FFI of Myanmar.

B. Limitation of the study

The field study could cover more on coastal area with limited in landscape area. During the process of project preparation period, while the team do not get approval from KNU, the team could not collect data from KNU control area where a good forest can discover, with original residential while most of the intended project site were located in KNU control area, especially in landscape of Myeik District. Field data collection can start only in monsoon, where travelling in seascape with extreme weather. Data coverage on landscape was very limited.

C. Field work

The study has conducted in coastal area of ***Kyun Zu*** Township, that was formed with (4) Ward and (20) village tracts. The area was covered with seascape, island, plain field and hilly region. Out of (4) Ward and (20) village tracts, the team has a chance to collect data at (3) village tract from ***Auckland Bay*** area and (1) village tract from ***Thayawthadangyi*** island, a total of (11) villages has visited. Local contact and arrangement was provided by NC2, FFI and Myeik Forest Department.

In landscape area, the team collected data at ***Tanintharyi*** Township and ***Bok Pyin*** Township. ***Tanintharyi*** township was formed with (2) Ward and (19) village tract with total (215) villages and among them, the team can visit only to (3) villages from ***Thein Khun*** village tract, situated along the ***Myeik – Kawt Thaung*** road and on the way to ***Maww Taung***[9] town. In ***Bok Pyin*** Township of ***Pyi Gyi Man Taing*** town, it was formed (33) villages under (2) Ward and (7) village tract. Out of it, the team can meet with (5) villages from ***Bankalar*** village tract, with arrangement from ***Tanintharyi*** Forest Department and NC1. The following table show detail of FGD based villages.

A series of (4) times data collection field trip has conducted in late May and ends in early August, 2016.

Table 1: Data collection villages

No.	Village Name	Village Tract	Township	PA area
Coastal area				
1	Pann Zin	Taw Byarr Gyi	Kyun Zu	Auckland Bay
2	Min Gaung Hsay			

[9] Border town of Myanmar and Thailand but not officially open for boarder trade

3	Shaw Daw Maw	Ba Da Net	Kyun Zu	Auckland Bay
4	Won Taung			
5	Shan Bon			
6	Mine Thway	Ga Bin	Kyun Zu	Auckland Bay
7	Mine Thway (Kwet Thit)			
8	Mine Thway (U Yin Gyi)			
Seascape/ Island area				
9	Don Pale Aw	Yae Myit Kyee	Kyun Zu	Thayawthadangyi
10	Don Lin Lunn			
11	Pa Raw Wah			
Landscape area				
12	Chaung Nauk Pyan	Thein Khun	Tanintharyi	Htaung Pharoo PA of Tanintharyi landscape
13	A Mut 9 (Sa Phan Kauk)			
14	Thae Phyu			
15	Ban Kalar	Ban Ka Lar - Pyigyimantaing	Bok Pyin	Lenya landscape
16[10]	Htaung Hkaw			
17	Yadanar Bon			
18	Lay Nyar			
19	U Yin Gyi (Pon Ywar)			

III. 2. BACKGROUND

A. Background of study area

Myanmar has experienced more than 60 years of civil war and most of the people living in war torn areas are ethnic minority farmers engaged in cultivation using customary farming practices passed down from earlier generations, and their relationship with the land is spiritual, cultural and social. For those who are staying along the coastal area, fishing folks are practices on their traditional method that link to their worship to god.

Villages along the Tanintharyi coastal area as well were once affected by civil war. Around 1990, after military government step on, almost all the villagers were forced to move to relocation center by burned down their villages. Since then villagers were spread across the region and to Myeik archipelago. Some they move to their relative places and some stayed on boat and earn their living as sea gipsy. During that time, for those who stay on boat for such a long time, they were not accepted by some villages and were accused as backbone of KNU, being afraid of government army. The areas were marked as black[11] zone where anybody who sees suspect, he/she has shot down to death. They have been staying under two governments, military and KNU government[12]. Villagers were oppressed by different kind of taxation from both the group including porter. The area has mixed group, ABSDF, DKBA, KNU, NMSP, Rakhine army, Muslim rebel group[13] and the government army. It has changed to a mixture of brown[14] and white[15] zone only after 2012 ceasefire agreement has signed, but follow with extraction on natural resources by business companies. At the same time they brought bulk of migrant workers along with them into the area and as well, absconder and ex-servicemen came and settle into the area.

[10] Villagers from ***Htaung Hkaw, Yadanarbon Mine, Lay Nyar*** and ***U Yin Gyi (Pon Ywar)*** villages were participated in ***Ban Kalar*** village FGD as the team could not reach to the area because of monsoon road condition, especially for ***Yadanar Bon***. The rest (3) villages joined with ***Ban Kalar*** village FGD as their villages were situated continuously with ***Ban Kalar*** village along the road

[11] Rebel populated area

[12] In this report, "KNU government" has used as per usage of villagers from some FGD group

[13] The study could not explore more but they were one of the rebel group that inhabited in the area

[14] Partial area/ fighting could occurred anytime between armed group and the government army

[15] Peaceful area/ no fire zone

B. Population and Ethnicity in the study area

As per 2015 census[16], total population of ***Kyunsu*** is 171,753 (M = 87,777, F = 83,976). The Urban population is 5,548 (M = 3,054, F = 2,494) and the rural population is 166,205 (M = 84,723, F = 81,482). The data shows that rural population is about (3) times higher than that of urban population in Kyunsu Township. In ***Tanintharyi***, total population is 106,853 (M = 54,817, F = 52,036). The Urban population is 5,514 (M = 2,746, F = 2,768) and the rural population is 101,339 (M = 52.071, F = 49,268). The data shows that rural population is about (2) times higher than that of urban population.

In landscape of ***Tanintharyi*** Township, Bamar (Myeik Tharr)[17] is the majority with total population of 82,696; the second largest population is Kayin with 11,318; and the third highest population is Shan, 1,260. Total population in ***Tanintharyi*** Region alone is 96,296[18]. Ethnicity data was not available in ***Pyigyimantaing*** GAD. Depend on 2014 Myanmar Census, because of reaction on conflict sensitivity, releasing of ethnicity data is still pending.

a. Bamar (Myeik Tharr)

In this report, ***Myeik Tharr*** refers to those who are the origin of the ***Tanintharyi*** region dweller. This could differentiate between the local and outsiders as the accent of the language they use were different from those who come from different part of the country, ***Bamar*** accent and ***Myeik*** accent. On the other hand, their native place and duration of settlement in the area could see that whether they are the origin or not.

b. The Kayin/Karen in landscape

In landscape area, village like ***Thae Phyu,*** most of them are the origin of the dweller and some are from nearby villages that situated in the PA, especially ***Thajet***[19] PA. While they are not allowed to reside inside PA, they have to come to relocation site and usually, they went back to their place of original/old village where they have been broad up and earn their living, especially on orchard. For the origin of Karen community, even though they use same Karen language, with the accent, one can categorize whether he/she the origin of the local dweller or outsider.

c. The Kayin/Karen in seascape

The Kayin communities on the island area were migrated from inland and coastal area because of civil war between KNU and the Government military. Even though the ceasefire agreement has signed in 2012, they could not go back to their place of origin where government land concession to business companies such as Pyi Phyo Tun, Htoo has granted made them continue to reside on island and change their livelihood patterns. Even though they move to sea side, they continue the practices of orchard and as well fishing was also source of income. In 1971, the Kayin missionary[20], start her missionary work towards the Moken community, along with inclusive development plan. Today almost all the Moken community speaks Kayin, Bamar and Moken and most of them were practicing Christianity and some with traditional animist.

d. The Salon/Moken

The Moken community in this report refers only to those who reside closely with the Kayin/Karen community as the team could reach only to this community.

e. Shan (Thai descendent)

The word Shan does not mean to those of Shan ethnic who are from Shan State of Myanmar. Along the Southern part of the country, people used to call Thai as Shan and Thailand as Shan Pyi. Even though it was mentioned as Shan, in reality this Shan ethnic group does not include in 135 Myanmar ethnic groups. In Southern part of Myanmar, while the area borders with Thailand, population movement was high and complex. In this report, Shan ethnicity indicates to Thai descendent people. On the other hand, this Shan were neither accepted by Thai nor Myanmar as both the side marked them as Myanmar from Thai side or Thai from Myanmar side.

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[16] The 2014 Myanmar Population and housing census, Tanintharyi Region, Census Report Volume 3-F, Pg-18

[17] The origin of Myeik but they are the Burman/Myanmar

[18] As per Tanintharyi Township GAD data, updated on May 2016

[19] ***Thajet*** PA, which is boarder to ***Thein Khun*** PA***, Tanintharyi*** NP, and is under KNU control area, the team could not reach to the villages that situated around the area

[20] Naw Say Bay, age around (90), till to date, she is moving around the Moken villages and continue working for the Moken community, leaving her team in every Moken villages. She is now based in Yangon.

f. Migrated community

Most of them are migrant workers were brought by Palm Oil Company. Today, some company has stop operation, they continue to stay in the area and earn their living by logging and trading wood, running grocery store. Some they left their work and join the community turn their status into villagers. But they prefer to work as salary workers and as well cultivate new land to set up orchard.

C. Citizenship entitlement in the country

In previous day, not all the people, especially those who reside in rural remote area, do not possess to National Registration Card (NRC) although they were entitled to it. In 2015, as per countrywide implementation plan for receiving NRC, aiming for those who were entitle to be as voter in 2015 election, issued NRC.

Regards to Moken issue, study has found out that in ***Parawwah*** and ***Don Pale Aw (Salon Gone)***, on their NRC, their ethnicity has converted into Kayin, while Moken was not under 135 ethnic lists, to get worked done, the Moken community allows them to substitute with Kayin in terms of receiving NRC, whatever the data on NRC, they allowed to change and on the other hand they do not aware with how importance of their identity was.

Concerning to Shan (Thai) issue, FGD with 5 villages under ***Bankalar*** village tract, the Shan (Thai) community has been residing in the country since their ancestral period of time, but concerning to citizenship, because of their ethnicity, they were pending on receiving NRC card.

> *"…I have 2 children with 5th and 9th grade. The elder one does not get NRC yet. Next year she has to sit for 10th grade and without it, she's not allowed to sit for the exam. My parent, I and my daughter, all were born in this country but except from me, the rest didn't receive the card…"*
>
> *U Kain (Htaung Hkaw village)*

In contrast, in ***Thea Phyu*** village, FGD group mentioned that anyone whoever in the village received NRC card. There was no difficulty in getting NRC. As per staff[21] from Government department, some people in the area, they hold 2 to 3 NRC card that issued with different state and region number[22].

D. Religious traditions and beliefs

Buddhism, animism, nat-worship, and bed-worship are still practicing in the area. Around 1900s, the first Christian mission reached Myitta[23] and some Kayin community in the area start to convert to Christianity.

Almost all the visited villages in coastal area in ***Auckland Bay***, the majority were Myanmar, so called "***Myeik Tharr***" and practicing on Buddhist religion and celebrating Buddhist related ceremony (Ka Htain, Natt[24] worshiping ceremony, donation and welfare ceremony, pay respect for elderly, Sabbath religious). Most of the communities residing along the coastal area in ***Auckland Bay***, The rest Christian and Muslim are very little in numbers. In ***Ba Da Net*** village tract, it was found out that the Muslim villages were formed separately close to Buddhist village, which was on island but not far from Buddhist village with same livelihood pattern.

At seascape site, most of the Kayin community and some Moken community were practice on Christianity. Animist worshiping is still practicing in the area, especially with the Moken.

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[21] Anonymity staff based in the study area

[22] For example, if a person is from Yangon Region, his/her NRC card start with 12 (12/initial of township xxxxxx) and if from Kayah, it start with 13

[23] Dawai district

[24] Worshiping spirit

IV. 3. GOVERNANCE

A. Village Social group

Every village has village level working group, such as, Fire brigade; First Aid of Red cross; Women youth group; Men youth group; Married group; Religious deacon group; School committee; Parent and teacher association; Volunteer youth group; Sunday rubbish pick up group. Usually, all these groups were help to work for village welfare activities especially on donation and religious ceremony.

In every Buddhist villages, monk is the most respectful person where he has authorization power to control the community. If the village do not have respectful monk, the unity of the village as well could not grow well. The study has found this in ***Thae Phyu*** village, monk has done unacceptable fault, and he could not get respect from the villagers. Regards to village welfare, there was no voluntary lead person and depend on sector by sector, the community take care of their own responsibility. The Kayin, Shan (Thai), Bamar, they stay with their own community. It was found out that the Kayin communities in the area were closely managed by the KNU.

B. Education (School)

Except from ***Pann Zin***, the rest of the visited villages in the three areas, have middle school level, primary school level and some Village Support Primary School (VSPS) level. In village like ***Chaung Nauk Pyan***, while there was no government stated plot to build for school, the primary school has exist that operating under village fund but was entitled under MoE, with government appointed (1) teacher and (2) volunteer teacher funded by village community. In contrast to ***Mine Thway (U Yin Gyi)*** village, while migrant workers came into the village, the school has set up and run under MoE since the school was filled with migrant's[25] children, where migrant community was higher than that of villagers. Villages that do not have high school level, school dropout rate were extremely high and this has encounter across all the villages with SPS and SMS.

In ***Pann Zin*** village, Government High School level has granted start from 2016 and was fully operating with school system. Until 2015, it was middle school with attached to high school level, which is until 9th grade and school going rate has higher compare to 2014. While high school has situated within the village, especially girls do not need to drop out from school. Parents as well they let their children continue reach to high school. Government appointed school principal resides in the village and it has been already 3 years now. Depend on village leader, being former Minister for Mining at ***Tanintharyi*** Regional level, the village development is higher than that of village compare to other villages and as well chances and opportunities were unequal. The village is USDP village.

In ***Don Pale Aw (Salon Gone)*** village, the school attendance of Moken children for primary level were solely depend on village appointed volunteer teacher, who speaks Moken, Kayin, Bamar language, while Government appointed teachers speak only Bamar. The importance of multi language speaking teacher is required, especially in Moken villages. For the Moken children to attend school regularly, elder used strategies of threaten them with Government Army. The number of Moken children who reached to 10th grade level was very limited and for this year, only one has enrolled.

C. Health care system

Pann Zin and ***Shaw Daww Maw*** village has village level health care clinic with government appointment midwife. Nevertheless, some of the pregnant women still depend on lay midwife as the cost of delivery was lower than that of deliver with trained midwife. What the midwife mentioned was that if the patient deliver with lay midwife, the clinic will not take responsible for any complication related to delivery. On the other hand, what the ***Shaw Daw Maw*** FGD group mentioned that delivery charges in village clinic was quite high for them to afford, which cost Kyat 40,000 (delivery charges Kyat 15,000 and medicine charges Kyat 25,000), if they deliver with certified midwife. In this regards, those with very low income family as well as with no complication in prenatal period, they delivered with lay midwife. As per clinical record, delivery patient and malaria patient are the highest in the village. There is no awareness on family planning program in the area. In June and July (2) month alone, the delivery case that come to clinic was at least 10 cases with normal delivery and it was not include with lay midwife delivery cases.

[25] The village has huge charcoal making business, and in search of job, migrants together with their family came and settle in the village earn their living. In return of profit, the owner and the workers share rate method

For vaccination process to infants, mother belief that when they get vaccination, the infant got fever and mothers avoid getting vaccination[26]. There is little dengue patient but not high and malaria as well. Malaria campaign (jointly conduct by Ministry of Health, CAP-Malaria, and President's Malaria Initiative) funded by USAID. They give "village malaria volunteer training" to every 2 person from each of the village. And it was a series of training follow with refresher course. All the volunteers have to go and attend the training at "Kyun Zu". This program has implemented across the ***Auckland Bay*** area.

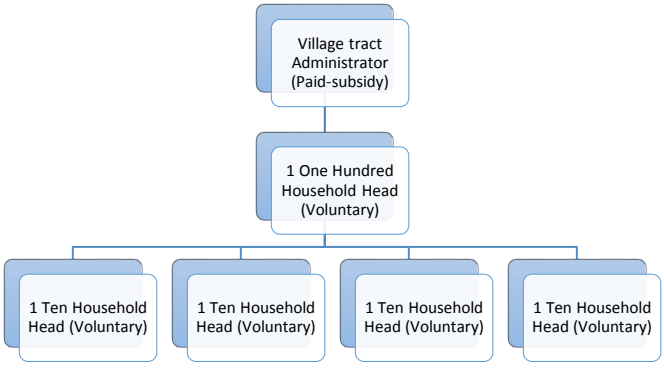
In some village like ***Mine Thway***, even though the village has government clinic equipped with one staff nurse, the villagers do not get proper treatment when she was on her trip for whatever the purpose for. Regards to this if there was any emergency case comes up, they all have to go Myeik hospital. While public transportation took at least 4 to 5 hour, patient lost their live on the way to Myeik. For Island villages, there was no public transportation they have to use fishing boat and at least it took them 6 hours to reach to Myeik.

D. Village level management structure[27]

As per MoHA structure, all the villages were formed with Ten Household Heads (THHHs) and One Hundred Household heads (OHHHs) and was voluntary served for the community. Village Tract Administrator (VTA) was appointed in each and every village tract level. Depend on size of the village they appointed THHHs and OHHHs. THHHs mean in every ten household there was (1) THHH and for OHHH, an estimate about (1) OHHHs has to manage (10) THHHs. But if the village population was something around (150), they could appoint from (10) to (15) THHHs with (1) or (2) OHHHs.

In village like ***Pann Zin***, although the total household was (480), there was (38) THHHs and in regards to OHHHs, (4) were appointed. It depends on their manageable capacity. As show in figure (1), ***Shaw Daww Maw*** village was formed with (1) Village Tract Administrator (VTA), (1) OHHH and (4) THHHs for (270) household.

Fig (1): (480) household of Shaw Daw Maw village level administration structure



The VTA is head of the village authorized person and own to decision power for village development and in every administration sector. Usually this person used to be male but with very limited number of female VTA exist. VTA received personal subsidy from GAD[28] of MoHA rather than a salary and its not technically a government employee. As they are not GAD staff, VTA cannot be promoted within the GAD, but can be dismissed by the GAD's township administrator for abuse-or-power, incompetence and

[26] Informal conversation with midwife nurse from ***Shaw Daw Maw*** village health clinic

[27] Myanmar Administrative Structure can be found at mentioned linked, http://www.themimu.info/sites/themimu.info/files/documents/Myanmar_Administrative_Structure_Aug_2015.pdf

[28] Pg 33-34, GAD's functions and structures at the village tract level

corruption charges[29]. Each VAT was supported by a village tract clerk, who is a full GAD employee and therefore receives a salary and can be promoted within the department.

E. Womens participation in community work and leader position

Regards to female VTA, what the community perceived that it is not suitable for women to become a VTA while she has to be on duty whenever an issue arises whether in day or at night. On the other hand, women were accepted as she has less confidence and limited for them to travel during night time without any accompaniment. To become a VTA, she should be a qualified person as well as concerning to marital status, single is more accepted as she has to provide full attention on social and community work, that has to spend most of her time which could stopped their household work. In contrast, for men, they can serve fully for their time, while women at home take care of household chores. In this regards, there is no or very limited number of female VTA in place. Regards to this, it is more suitable for male to be VTA than appointing female VTA and accept that male are the only one who should be in the position.

V. 4. EXTERNAL RELATIONSHIPS

A. Local Governance and its relationship with governmental department

In military government era, Governmental related Association, also known as GONGO, such as Maternal and child health Association and Women affair Association were taken place but now a day they are not active anymore. The villagers mentioned that usually they have to accommodate the visitors; especially regional level officials visit to the village only but not depend on welfare of women and communities need in the village.

Department of Fisheries, it provides services for fishing licensing in the villages, and licensing fees were different from places to places. Usually, villagers renewed their fishing license at VTA's based village but if they go and renewed in ***Kyun Zu***, capital city of ***Kyun Zu*** Township, the charges was higher because of time consuming and as well expenses on travelling, and regards to this, they preferred renewed fishing license at the village. In ***Kyun Zu***, the amount would cost Kyat 8,000, but if in ***Pann Zin***, the amount cost Kyat 12,000 and if in ***Min Gaung Hsay***, K 15,000[30]. If the fisheries department went to each and every village the charges will get higher compare to village tract level and township level. Regards to fishing net license, depend on type of fishing net and how big the length was, the department charged for the license fees. In actual cost, mutual understanding between the staff and the user, they (the department and village) adjust the payment for license fees.

When it comes to issue related to criminal cases, i.e. attempt to kill or rape, the case were refer to police department that based in ***Kyun Zu*** where township office situated.

Charcoal making was very prominent in the area and charcoal carrier boat has to deal with three departments, police, forest department, and military, for free trading by providing tip money to the department.

Township level education department is closely worked with villagers through school committee and principal. Regards to Ministry of Health, township level health department can reach via government appointed midwife and volunteer health workers.

Depend on size of the village and its completion of registration under MoHA, village has set up with stated village structure has.

[29] The role of VTA is very important, however, as they are the interface between the central state and most of Myanmar's population, which is 80% rural. Indeed, VTAs are the anchor of the GAD's vertical role in public administration, and they effectively act as an extension of the GAD's township administrator, who supervises them. VTAs continue to play the same varied roles that they have historically, including tax collection, land registration, and reporting on demographics. At times, VTAs may even be required to sign off on farmers' loans from the MADB. VTAs' engagement with businesses is limited to providing recommendation letters for certain licenses and permissions. Village tract clerks support the administrators and keep records of administrative, economic, and social statistics, as well as office procedures and security records on 33 standardized forms. While many of the functions of the township office concern the GAD's historic role (data aggregation, land management, dispute resolution, and tax collection) increasing effort goes into coordinating the proliferation of district, township and village-level development and management committees. Pg 34, Para 2-3, Administering the State in Myanmar: An overview of the General Administration Department.

[30] 1 USD = K 1,100 to K 1,180, as of early 2016

Education and Health care clinic are on first criteria list in every villages. Not all the villages were granted high school level and depend on size of population, and Ministry of Education (MoE) owned plot for school to build, level of school were granted. Those villages that were registered under MoHA lists, at least primary school with government appointed teachers were granted and it goes same with village health care clinic with government appointed midwife staff level but not nurse.

B. External Assistance

There is no NGO/INGO operating in the area[31]. And the communities do not have any idea and knowledge on external assistance. The community from ***Bankalar*** village mentioned that NGO came and collects data and later they disappeared.

In coastal area ***Shaw Daww Maw and Mine Thway (U Yin Gyi)*** villages, Myanmar Green Network (MGN)[32], an environmental conservation organization, has initiated community forestry since 2015 and appointed locally based community facilitator. The facilitator mentioned that cooperation among the community was very weak while survival was more important than that of project implementation, CF. Whenever there was meeting concerning to CF, they rarely attend the meeting but participate more in field implementation level, e.g. demarcation of CF.

Governmental Ministries such as Ministry of Health, Ministry of Education and Ministry of Agriculture, Livestock and Irrigation[33] (MALI) are operating in the area. Mya Sein Yaung program and CDD[34] program were implementing under MALI that provide grant for village development which is target on infrastructure has implemented in all the visited villages.

Most of the visited villages in Auckland Bay area, they installed generator for electricity with grant from CDD fund. In ***Minn Gaung Hsay*** village, under CDD program, the village has constructed jetty with Kyat 8,000,000/- grant together with local contribution that include both in cash, Kyat 9,000,000 and in kind. In ***Pann Zin*** village, a Korea business company implemented algae breeding project by introduced to the village community but because of high investment and labour shortage in the area, villagers do not have interest on the program.

C. Aid effectiveness

In ***Pann Zin*** village, as per CDD program, the project committee has made up of 16 members, with equal number of male and female. Regards to implementation of the project, it was grant, Kyat 8,000,000 that provide for village development. In this regards, villagers decided to construct bridge that connect within the village path way. While this type of program is short term with one time grant, village participation is very low. The implementation was applied only to those who received infrastructure for their residential part. As the village has divided into three parts (east, west and middle), they agree to draw lottery and in this regards, one part of the village win the lottery, nevertheless, they could not afford to construct the bridge, that those who reside in construction area, they have to provide both in cash and in kind. As they could not afford for the requirement, they passed on to those village part who could afford to build the bridge. Today, the construction was implemented at former State level Minister for mining residential area.

[31] In previous government time, limited NGO/INGO were allowed to implement in the area because of the existence of different kinds of groups[31] in the area. The government doesn't allow any of the MoU between government ministry and NGOs/INGOs. MSF (doctors without boarder) forced to stop operating in Tanintharyi region in 2013 and ICRC was based in Hpa-An, Kayin State that focus on rehabilitation for the mine victims.

[32] MGN is working closely with FFI and this implementation could be one of the sub-contract of FFI implementation strategies

[33] Former Ministry of Livestock, Fisheries and Rural Development

[34] CDD program initiated by MALI granted by the World Bank.

VI. 5. SOCIO ECONOMIC SITUATION

A. LAND REGISTRATION AND ENTITLEMENT

a. Land registration and entitlement in coastal area

In ***Minn Gaung Hsay*** village, it has farmland, where the village was engaged in paddy farming. Regards to land registration, those who works on farming, the land were registered on 2015 and received land registration (Form-105[35]), but land registration (Form-7[36]), was still in the process. For those who work on paddy farming, they can get loan Kyat 100,000 per acre but not exceeding 10 acres of farm land from Myanma Agricultural Development Bank (MADB). Even though the village has plane area for paddy plantation, while agricultural inputs was high and the paddy production was not enough for year round for the family who works on plantation, now a day, there is very little family works on it. There are (3) rice mill in the village but one has recently stop operating and the whole family migrated to Thai leaving it without any assistant.

In previous day, there was no practices on orchard in coastal area, but later follow the year, land ownership in the countrywide is an issue and the local community as well as an outsider start to cultivate on orchard where there need not to take care of but only for the purpose of land ownership. There were no practices on shifting cultivation in previous day and till to date. Outsiders like governmental staffs were also include in cultivating orchard during their service in the area[37]. In ***Won Taung*** village location was on forest along the coastal area and most of the villagers earn their living both on orchard and fishing. The registration process of (Form – 105) and (Form – 7) as well going along and granted. In ***Mine Thway***, 5,367 acres wide mangrove CF has established directly with FD and it was under processing.

In landscape area because of different policy stated by the different government, KNU government and the central government, which is land policy and land use policy, depend on their place of residential location; people follow under responsible governments' management. It was found out that, in ***Thea Phyu*** village, while villagers intend to establish CF in KNU control area, they are planning to register under KNU government. The village is positioning on meeting point of the three routes that comes from ***Maw Taung*** in the east, ***Tanintharyi*** in the west and ***Kyain Chaung*** from North West, where mixed group of ***Kayin, Bamar*** and ***Shan*** were reside. While in ***A Mut 9*** village, on the way to ***Maww Taung***, the villagers also implement CF but registered under central government.

b. Land registration and entitlement in landscape area

Landscape finding were not covered to the whole ***Myeik*** District but some part of ***Tanintharyi*** Township and ***Bok Pyin*** Township.

During field visit in landscape area of ***Tanintharyi*** region of ***Htaung Pharoo*** PA and ***Thein Khun*** PA, the hottest issue that the team has discover were area that occupied by squatter or illegal tenants in the area. All visited villages were denotified by ***Tanintharyi*** FD in 2015 with above and below of 50 HHs villages. Not only ***Tanintharyi*** FD but also ***Bok Pyin*** FD as well under pressured of managing the issue and the transfer of Township FD Officer/heads were often occurred. FD staff could not be visible in uniform being afraid of attack by the locals. The area was occupied by mixed group of KNU, DKBA, NMSP, Muslim rebels group and etc[38]. In previous government time, FD could not reach to each and every village that situated inside PA but only after NLD government step on.

> *"… after Rights were granted to the civilian, we the staff has to afraid of them (the communities) and they are the one who entitle to land rights and so we have no or little space to manage illegal tenant issue…"*
>
> *Staff Officer, Tanintharyi FD*

[35] Form 105, land registration form that include with map by measured area
[36] Form 7, land use certificate
[37] This was found out during informal conversation with ***Shaw Daw Maw's*** head of police station (□□□□□□□□□) wife. They plant 2,500 beetle nut plants and the land was about 5 acres big in *Minn Gaung Hsay* village area.
[38] The team does not have a chance to explore more on the different group that residing in the area.

In previous[39] government time, land concessions were granted to business sector for plantation of Palm Oil in ***Tanintharyi*** Region. These business companies[40] brought workers from different part of the country to work in different sector of their company. The workers came first and after a year or two later, the relative/ family member back at home followed them and some with friends contact, they migrated to these areas. As per companies CSR program and for long run, the company provides schooling for the workers' children. This has been running for more than two decade, and later the company has withdraw from the area, and as well all the forest land were washed away with logging and substitute with Palm Oil plantation, but not cover to all logging field. But for the migrated workers and their family and relative, they still attached to the area where they have been working for more than a decade or two. While some of the villages along the ***Myeik – Kawt Thaung*** road, being situated inside ***Htaung Pharoo*** PA, in 2015, these areas were denotified/ degazetted from ***Htaung Phroo/ Thein Khun*** PA by FD and turned into village. Some villages were already registered under MoHA, some were under process and some not on the list yet but they appeared under GAD list.

Table (2): Villages that occupied by squatter inside and outside of PA, where Tanintharyi FD is closely handling on illegal tenants issue.

No.	Name of village	Registration situation	PA
1	Maww Taung	> 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
2	Ta Kaw Paww Lu	> 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
3	A Mut 3	< 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
4	A Mut 5	< 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
5	A Mut 6	< 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
6	A Mut 9	< 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
7	Thea Phyu	> 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
8	Kyain Chaung	> 50 HHs, do not appeared under MoHA but under GAD	Thein Khun
9	Tar Balut	< 50 HHs, do not appeared under MoHA but under GAD	Htaung Pharoo
10	Chaung Lamu	> 50 HHs, do not appeared under MoHA but under GAD	Htaung Pharoo
11	Aye Tharyar	< 50 HHs, do not appeared under MoHA but under GAD	Htaung Pharoo
12	Chaung Nauk Pyan	< 50 HHs, do not appeared under MoHA but under GAD	Htaung Pharoo
13	Aye Mon Thar	> 50 HHs, do not appeared under MoHA but under GAD	Nga Won

The study found out that the population list that appeared on village tract level at GAD list was different from actual data that collected from the ground. Table (2) shows the differences between GAD data and actual data collected from the field.

For the purpose of ownership to land, now a day, in many area depend on good accessibility, that include transportation and communication, many people came to the area and make incursion or occupied by squatters or illegal tenant. In village like ***Chaung Nauk Pyan***, while new comers were continuously coming in, the villagers do not let them reside inside the village but let them stay outside of the village. They came in and set up their place to stay and on the other hand they start to clear virgin, vacant and fellow land for establishment of orchard. In ***A Mut 9*** village, the villagers were moving in and out as it depends on job availability in the area and if they could not survived, they went back to their old village and earn for their living there. Villagers (new comer or old residential) do not earn their living as Palm Oil company's wages workers, which was K 3,000 per day while they worked on land clearing at orchard, they get K10,000 to K 30,000 that depend on their work done. In ***Bankalar*** area, as well villagers did not work for Palm Oil Company while they work on land clearing; they get K 6,000 – K 7,000 per day.

Their livelihood activities were not that clear but as per conversation, they totally depend on orchard, on the other hand, runs grocery store. During FGD with ***Chaung Nauk Pyan*** village community, it was found out that one of the residential was from ***Tanintharyi*** and he has his own house and plot in ***Tanintharyi*** town. Now in this ***Chaung Nauk Pyan*** village, he runs grocery store that attached with small restaurant. Behind this, follow with ownership to orchard land[41]. What the communities internalized, accept and practice that, to become a land owner, they explore the new location and clear the land and turn into orchard that could present, the land was owned by them. Then again, they were also not sure that whether they will own the land or not but one came

[39] Partial military-civilian Government and Military Government

[40] In this area, *Htoo Oil Palm Plantation Company and Atro Agro Group Company*, was largely extract logging for the sake of re-plantation on Palm Oil

[41] It used to be vacant, fellow land virgin land

and start practice and follow with another by receiving information of this purposes[42]. After the village was on the list of GAD, villagers do not allow new comer to come in and stay inside the village.

Whoever asked on what they have planted, only beetle nuts and rubber were planted that do not need intensive care, but only in harvesting time, plucking nuts. When asking on yield of products, ***Chaung Nauk Pyan*** and ***A Mut 9***[43] communities mentioned that forest fire washed away and they could not reap the fruits yet but only very little number of plot. Some mentioned that they set on fire to ones plot intentionally. For ***A Mut 9*** village, orchard was not their main livelihood income but on trading of flat wood[44], to ***Thai*** side through ***Maww Taung*** rout, until 2015. After NLD government step on this type of trading has stop and trafficking has replace from this rout.

Today it was found out that most of the granted companies were worked only on extraction of logging but not on replanting and regards to this, as per government implementation plan, they investigate and confiscate the permit from those companies who do not operate on the granted land. But those land were already cleared by logging by the time of withdraw.

Contrary to ***Yadanabon Mine*** village, which was establish in 1954, the area left with good forest and located in old mining area, yielding of betel nut was very high that they could survive for the whole year with harvesting from the plantation. On the other hand this village is close to Thai – Myanmar border.

[42] This finding was found out during FGD and is the findings of NC3 but not mentioned by the villagers. This issue has discussed with NC1 as well.

[43] ***No. 9*** village, ***Thai*** name as ***Saphan Kout***. In previous day, there were mining plots in the area and depend on plot number, today, it left with existing plot number that turn into name of the village. It also appeared the same name on MOHA list. In 2000, people from different part of the region, migrated to this area and earn their living as mining workers. Around 2005, some of the mining were stop operating and since then, those migrated workers do not went back to their origin of the place and continue to stay at the area and turn into villages. It was not clear that the mining plots were owned and operated by government or companies.

[44] Stem of a tree, cut into horizontally position, which comes out with flat tree stem that used for table in natural style

Table 3: Field data Vs GAD data

No.	Village Name	Village Tract	HHs	Families	Population	Male	Female	Remark
Coastal area								
1	Pann Zin	Taww Byarr Gyi	475	543	2541	1264	1277	Appeared on GAD
			480	>500	N/A	N/A	N/A	Actual data from field
2	Min Gaung Hsay		203	215	1400	706	694	Appeared on GAD
			N/A	N/A	>1000	N/A	N/A	Actual data from field
3	Shaw Daw Maw	Ba Da Net	233	248	1254	647	607	Appeared on GAD
			N/A	N/A	N/A	N/A	N/A	Actual data from field
4	Won Taung		98	120	668	336	332	Appeared on GAD
			99	129	689	278	322	Actual data from field
5	Shan Bon		69	70	371	189	182	Appeared on GAD
			76	81	>410	190	210	Actual data from field
6	Mine Thway	Ga Bin	255	260	1760	924	836	Appeared on GAD
7	Mine Thway (Kwet Thit)		150	164	984	515	469	Appeared on GAD
8	Mine Thway (U Yin Gyi)		70	70	322	156	166	Appeared on GAD
			41	43	203	93	110	Actual data from field
Seascape area								
9	Don Pale Aw (Salon Gone)	Yae Myit Kyee	96	N/A	N/A	N/A	N/A	-
10	Don Lin Lunn		N/A	N/A	N/A	N/A	N/A	
11	Pa Raw Wah		73	82	N/A	143	145	# of voter for 2015 election
Landscape area								
12	Chaung Nauk Pyan	Thein Khun	36	36	148	80	68	>50 HHs, not appeared under MoHa but on GAD
			49	50	183	90	83	Actual data from field
13	Thae Phyu		103	103	574	306	268	>50 HHs, not appeared under MoHa but on GAD
			N/A	N/A	N/A	N/A	N/A	Actual data from field
14	A Mut 9 (Sa Phan Kauk)		70	70	269	144	125	<50 HHs, not appeared under MoHa but on GAD
			120	>90	abt 650	N/A	N/A	Actual data from field
15	Ban Kalar	Ban Kalar	11	11	39	23	16	Appeared on GAD list
16	Htaung Hkaw		15	12	54	31	23	Appeared on GAD list
17	Yadanarbon Mine		77	95	363	193	170	Appeared on GAD list
			>300	N/A	N/A	N/A	N/A	Actual data from field
18	Lay Nyar		N/A	N/A	N/A	N/A	N/A	-
19	U Yin Gyi (Ponywar)		N/A	N/A	N/A	N/A	N/A	-

Note: GAD data, as of May 2016

B. LIVELIHOODS

a. Livelihood patterns in Coastal, Seascape of Island and landscape area

3 patterns of livelihood has found out in coastal, Island and landscape area. Livelihood pattern is same across Auckland Bay area. Main livelihoods of the three areas are as follow:-

Table (4) Livelihood pattern in coastal, island and landscape area

Auckland Bay	Seascape (***Thayawthadangyi*** Island)	Landscape
1. Shrimp farming 2. Shrimp paste making 3. Fishing (Crab, black crab) 4. Dry shrimp making 5. Orchard (Beetle, rubber) 6. Charcoal making 7. Selling Firewood 8. Thatch making 9. Migration 10. Wages workers (works on shrimp processing)	1. Diving for under water creature[45] 2. Orchard (coconut, beetle nut, durian, mango, jackfruit, cashew nut) 3. Coconut pealing 4. Drying fish 5. Pealing sea cradle □□□□□ □□□□□□□□□□□□□□□□ that attached on tree and rock in seaside mangrove forest 6. Migration 7. Wages workers (works on fishing boat)	1. Picking Kanyin leave 2. Orchard (Beetle nut, rubber, mango, jackfruit, banana, durian) 3. Running grocery store 4. Grow vegetable (pumpkin, chili, maize, cucumber,) and traders from Myeik come and collect at the village 5. Farming paddy 6. Animal raising that sell to Thai side 7. Hunting 8. Land clearing to set up new orchard 9. Illegal flat wood trading[46] 10. Migration 11. Wages workers at orchard 12. Wages workers at Thai side[47]

In coastal area, shrimp paste making is widely operate in dry season with very little in raining season, while shrimp paste making need enough sun heat, so they produce more in 8 month in a year. But for those who do not have extra work for income, they continue to work during raining season, means all year round. While it couldn't dry up completely, the quality of shrimp paste is going down and get with low price. Dry shrimp making is also one of the good incomes for the locals.

Especially for Shrimp paste making villages, they do not used to work on fishing in sea site, far from coastal area. They used to make living on coastal fishing and crab catching in mangrove forest. All these goods were transport to Myeik and Myeik is the end destination for their good to deliver. For some with small business or family business, their end destination is within the village and most of them used this type of selling. They used this method as they have to get advance cash from the business person/ traders who are as well residing within the village and in return they provide with goods that they have produce/ catch. If they sell in Myeik, they will get better price while they get cash in advance (for health, food to eat, other basic needs), they have to sell back only to traders/business person, in return. On the other hand, if they bring to Myeik, they have extra expenditure on time, travelling cost, food for travelling and so sell in village is easier for them to operate.

[45] Creature includes Sea cucumber, oyster, Pa Ge, and etc. To get Sea cucumber, one has to dive only in night time but for ***Pa Ge***, in day time.
[46] Cutting tree stem in horizontal position and trading to Thai side through ***Maw Taung*** rout
[47] Parachut

There was limited job availability in the area, especially for daily wage workers. In shrimp paste making process, women can get a job as daily wages workers but the areas do not have huge business but more on family business, the opportunity for getting women wages job was quite low compare to man. Regards to this some they work as domestic help but as well this was still low.

As charcoal making process, women used to work in packaging stage but what the owner said, getting charcoal end stage, it took at least (2) month and only at the end packaging stage need wages workers. Sometime, if the family member is big, the owner did not hire wages workers[48].

Thatch making is one of the sources of income that use for roofing. But those who earn on living with thatch making are not so much in the area now a day. Depend on size of weaved thatch, the price also goes different. 1,000 weaved thatch cost Kyat 50,000 for this year 2016. In ***Tanintharyi***, the price is Kyat 7,500 for 1,000 pieces and this depend on the quality of thatch with lengthy and tightness of weaved thatch. Local mentioned that compare to coastal thatch from ***Tanintharyi***, the quality of thatch from ***Tanintharyi*** can produce high quality and people prefer using it. For regular size house, pieces of thatch have to use from 2,200 to 2,500, and it depend on how closer to each of thatch roofing.

In ***Minn Gaung Hsay*** village, plain field paddy plantation has existed and the yield was not for selling but only for home consumption. And still this was not enough for all year round. In the area, 1 acre can produce 25 baskets that is very low production while the area could flooded with salty sea water and regards to this not all the paddy field were operated. On the other hand, because of high inputs, some paddy land owners no longer work on farming.

In previous day, there was no practice of earning cash from orchard in coastal area, but in terms of owning to land, some villagers they start to clear land and turn it into orchard and planted beetle nut and some are rubber. They rarely take care of it and when the team asked for the productivity of the beetle nut, almost all the visited villages mentioned that productivity was very bad because of bad weather. Another issue was setting fire on ones orchard or some mentioned of forest fire. Most of the beetle nut orchards were destroyed because they could not take care regularly. ***Shaw Daww Maw***'s FGD mentioned that because of land scarcity, they try to get land registration but not actually earn their living on orchard.

The highest number of working age wais between 20 to 40. Those who start to work was depend on level of family income and how big the number of family member. For those who do not have big household number, it could start works age around 12 -13. Usually male age around 12-13, they accompany their father to go into the sea for fishing or catch crab.

Usually women wages workers engaged in shrimp paste making business but this type of work was done as family business and this could not say a regular wages job for female. What the local believe and accept that there was no or little female job opportunity in the area. In terms of earning as wages workers, job such as domestic help within the village, and loading and unloading goods at jetty that good enough for them to carry. Alternatively, running residence-cum-shop or as vendor.

Small black crab (***Ga Nan Mei***)[49] has to catch in day time for whole year round with two times a month that depends on spring and neap tide. Usually this type of work was done by women together with their family member to earn their living that do not need for big investment. All these goods were export to Thai side by making salty crab. For big crab (Ga Nan Bone □□□□□□□□□□), it can catch from mangrove forest that could operate the whole year round[50]. And this has to work only in night time and usually man work on this earning. Now a day, a crab weighs ¼ to ½ Viss and the size of ½ Viss is the biggest size they can catch. In last 15 years back, the caught crab weighed 1 Viss per crab that could not get one in these days. And as well, the depletion of water products (fish, crab, prawn, lobster, etc.) was noticeably decreased. And as well, back to 3-4 years, while the catchment of crab was 100 Viss compare to today, the catchment is 30 Viss for one length[51] of spring tide of catching. Catching Molluse/ univalvular shellfish □□□□□□□□□□□□, usually done by female that has to get from mangrove forest. Another type of crab (□□□) that could only occurred once in 3-4 years and the price was very high and was rear opportunity to catch it. This type of crab can get at sandy bank.

[48] FGD with ***Won Taung*** village community

[49] Ga Nan Mei is a small black crab that has to catch in day time and usually both male and female earn on this type of work.

[50] Ga Nan Bone is a kind of crab that can only catch at night time and only man work on this crab farming.

[51] Depend on spring tide and neap-tide, fishermen go for fishing every spring tide in a month, estimate 8 to 12 days.

There is no alternative source of income apart from shrimp paste making business in the coastal area. Now a day, productivity of shrimp paste is getting low as the catch has declined 10 times that of compare to 10 years ago. Even though market price went up, which is K 700/- to K 1,500/- per Viss, still villager has to struggle for their basic needs.

Although local goods production was high, while post production system was not in place in village level, villagers have to bring to town to sell or sell with traders within the village with low price.

In ***Thayawthadanngyi*** Island area, diving for sea creature (sea cucumber, oyster …) was widely well-known and the Moken and Kayin are the only one who works on it. To work on this, one has to own to a boat that complete with pressure pump, oxygen, etc. for diving facilities with traditionally equipped. For those who do not own to these facilities, they were hired as diver in return of wages, cash or cash with amphetamine is the only incentive to hire them.

> *"…I don't let my son to work on diving instead I let them work in orchard. All the fisher in our area was addicted to amphetamine where this is the only motivation for them to work for…"*
>
> *U Koe Koe Doh, Don Pale Aw(Salon Gone)*

Mechanization of small-scale fisheries productions are in risk that displace villagers from traditional sources of livelihoods. The motorization of fishing boats led to bigger catches and left with small catches for the villagers. In 2015, FFI start to initiate LMMA in seascape area like ***Don Linn Lun, Don Pale Aw*** and ***Pa Raw Wah*** villages, studies has found that during the second visit to ***Don Linn Lun***, in early June of 2016, villagers mentioned that they could catch 5 times higher than that of in 2015 within their managing boundary. Challenges for the villagers was while they do not have full authority on managing the area or patrolling their own LMMA, means official document granted from the government, villagers sometime could not stop from outsider/fishing company invasion.

Landscape livelihood pattern has mentioned on the content across the report.

b. Financial services

Individual private micro-financing service was available in every village but interest rate is depend on collateral that they provide to the lender, that could range from 10% to 20%. Loan also can access depend on leaser ones job availability whether he/she can earn enough money to pay back loan. In this regards, it was hard for FHH for them to manage for their basic need especially to those with young children households.

There is no government or NGO program for financial service in the village and regards to this informal credit and loan system has operating that depend on trust. Usually, traders are the one who provide loan and by the end of season, villagers have to sell back their goods to the traders with stated price that could be lower than that of actual price.

Another type of loan system in the village was one get the amount Kyat 100,000 with repayment Kyat 5,000 every day that include both capital and interest, that due within 24 days means, interest rate was 20% within limited time frame.

Loan can get within village where the amount was not big but enough for run small business like selling snacks. The interest is depending on issue by issue. For those who could provide collateral, interest rate is 10% and without collateral, 30%. But it depends on trust and the business they own to could get loan.

For daily income labourer, they used to get advance from traders and by the end of the season (for shrimp paste making business) and day (small business), they sell back their goods to the traders with stated price that lower than that of market price and loan amount could ranged from Kyat 50,000 to Kyat 400,000.

c. Coping mechanism

All the households in the area relied on themselves, on community, and on social mechanisms to cope with hardship, and they rarely expected from the government assistance. Social capital in the community was high and it was common for neighbors to help one another to cope with sudden individual shocks by lending one another rice, water, and money especially for emergency health

purposes. There is still no practice for the villagers to raise their expectations on the government that was responsible for providing safety nets. In addition to diversifying livelihoods, coping mechanism to increase income included selling or pawning productive assets, but this came with its own problems.

In ***Auckland Bay*** area, there were no changes in livelihood patterns except from migration follow with remittances. There is no other job apart from traditional work within the village.

Those with young age, they migrate to town like Myeik and work in company, and wages workers. If they work in processing factory, and in prawn/ crab breeding company, the companies provide accommodation and they earn about Kyat 100,000 per month. Remittances is one of the coping mechanism to cope with the extreme situation, villagers choose for out migration to Thai to work in the factory sector and mostly are women who engaged in this activities.

C. SOCIAL RELATION

a. Education opportunity

In most of the visited villages, the school exist until middle school level, after completion of primary school 4th grade or middle school 8th grade, most of the children were drop out as the following reason that limit the student to continue their schooling.

For those who are with low income family, they could not continue their children to attend school in city/town and if they have a chance to continue their schooling, they move to city/town (Myeik) staying at their relative or boarding school or at monastery. Some children, as they never been apart from the family, they could not adapt with the new environment and they run back to the village. For girls, in regards to security reason, most of the parents do not allow them to continue their schooling while they have to move to other village or town where the school was available. Usually they give priority to young children in the family to attend school compare to elder. Most of the elder with working age, they drop out from school and engaged in family income earning.

In ***Kyunsu*** Township, who complete primary level in total was 40,779[52] (M = 19,952, F = 20,872) and for those who complete middle school, a total 13,453 (M = 7,904, F = 5,549). In ***Tanintharyi*** Township, a total of primary school completion was 23,804 (M=11,371, F = 12,433) while middle completion was 9,056 (M = 5,125, F = 3,931). In the two townships, male, female primary and middle school completion was more or less the same but regards to dropout rate, after completion of primary level, the dropout rate has increase, in ***Kyunsu*** (40,779 to 13,453), which was 4 times decrease in enrollment to middle school. In ***Tanintharyi***, 2 times decrease in enrollment to middle school.

Dropout rate was high in male then female in primary level as male can earn more and male job availability is higher than that of female. For example, crab catching is done by male while female are in supporting role. What the respondent mentioned that even though they let girls to leave school, as they cannot earn money, then they let them continue their schooling until school level available in the village. If they continue their high school, usually, they go to Myeik. Although who passed 10th standard, those with continue their university level is very low. Some continue but drop out in the middle of the university school year, concern to economic and social related issue accommodation in new environment, lack of guardian, etc. After completion of high school, for university degree, parent of two university students mentioned,

> *" … I have two children who attended university in Myeik. Because of economic situation in the family, I have to stop them from continuing their university…"*
>
> *Male FGD participant, Minn Gaung Hsay village*

Even though they were graduated, they could not get a decent job as they have to compete with others with limited job availability. For those who complete their university, mostly women join in education sector usually they start to work as government appointed primary teacher in village level. Parents helping their children to finish university, but after complete their university education it was found out that they were either under-employed or unemployed because these regions do not offer a lot of jobs and they have engaged in their origin of the traditional work, fishing sector. For those who went and work at ***Myeik***, for female, they work as sales

[52] 2014 Myanmar census, Table D-6b: Population 25 years and over in conventional households by highest level of education completed and sex, pg. 70, Census report volume 3-F (Tanintharyi)

girls at the shopping center or store and some as domestic workers. For male, mostly they engaged as wages workers or □□□□□□□□□□□□□ job.

In ***Pann Zin*** village, the number of graduate in the village is about 30, and most of them are women. Even though they are graduated, it is hard to get decent job except from teacher and usually, women used to be a teacher at school and the ratio is 1 male: 19 female. At present 2 female graduates was working as tutor at Myeik University.

In ***Minn Gaung Hsay***, for those who passed 10th grade[53] were about 30 students and graduates were about 15 persons. Among them 8 female graduates were engaged as primary teacher job. The rest of the graduates were engaged in fisheries and some running grocery store in the village.

b. Social impact on initiation of conservation toward indigenous people

Indigenous people, the Moken communities are sea gipsy origin, but today much of their traditional life, which is built on the premise of life of outsiders, is under threat and appears to be diminishing. Unable to cut down trees of logging ban, they can no longer build the boats that let them go to sea for up to eight months a year. Fishing restrictions mean they cannot rely on trading goods such as sea slugs and pearl oysters, which they used to collect while free-diving. Instead, they are exploited by trying to convert to a more sedentary way of life and they become lack in the skills that were once their most important inheritance.

Concerning to their home, it is not an easy transition and in the villages created for the Moken by the government, trash is everywhere. In ***Don Pale Aw (Salon Gone)***, an environmental conservation organization initiate income generating program, provides piglet to the community to breed. The program was targeted to the Moken community, which contradict to their traditional livelihood style.

To resist from under water pressure and long hour stay in deep sea level in search for sea creatures, they used amphetamine before they go for sea. As a result most of them suffered from casualties of decompression sickness that followed with long term illness, stroke.

Regards to social relationship, one[54] mentioned that the Bamar man marry Moken women while Bamar women never marry Moken men since they were considered unattractive naïve. In contrast, either the Kayin man or Kayin woman marry to the Moken Man or Moken woman, and continue to work on inclusive development towards Moken community[55].

D. Migration

As per 2014 Myanmar Census report, Total number of former conventional household members living abroad is 45,618 with (M = 25,984, F = 19,634), which is from Myeik District alone. Out of 8[56] and other country, Thailand is the highest number that migrated to, which is 41,840 (M = 23,188, F = 18652).

Apart from ***Mine Thway (U Yin Gyi)***, there were no or little incoming migration in the Auckland Bay area but outgoing migration is relatively high while job availability in the area is very low. In all visited villages, outmigration is one of the coping strategies, especially applied to those working age among 20 to 40, and was applied both to male and female. While the area was close to Thai – Myanmar boarder, people desire to move to Thai side where job can get easier than in country. Seasonal migration to Thai was common but not within in country. Out migration to city/town was also significant where they simply followed the work, staying for as long as the work lasted, and then returning home immediately, because they could not afford to stay on. These kinds of patterns common in coastal villages and was apply more on men. However, the overall numbers of out-migrants in the area were low compare to village population. Wages laborers were not able to save through such work or send money home; they earned money simply for their own subsistence.

In regards to social norms, it affected different pattern of migration for men, women, young and old. A common perception was that men were able to hold out physical toughness and cope with the worst kinds of situations wherever they went whereas women needed to be protected and stay closer to home. In contrast, in ***Pann Zin***, compare to men, more women are economically migrated to Thai to support for family income. They worked in factories especially in fisheries sector. They used to hire one space for accommodation and share the space among the group, but some they stayed at factory provided space. For female married with children, they left behind their children at home with elder or grandparents to be taken care of. On average, every 5 member of a

[53] Matriculation

[54] Anonymity from village higher level

[55] In ***Don Pale Aw (Salon Gone)***, a (68) year old Kayin-Moken woman, Naw Poe Lay, married to Moken man and today she continue providing holistic development to the Moken community

[56] Thailand, Malaysia, Singapore, China, Japan, Korea, India, USA and other

family, 3 is out migration for economic reasons and mostly are female, work in factory, in Thai side. On the other hand, study has found out that even though out migration was one of the source of income, for some family, while they don't want to apart from the family, they try to earn their living as wage labourer within the village or at nearby village. In ***Minn Gaung Hsay,*** Some household were engaged in migration but the rate is not that high compare to other parts of country. About 10 families have migrated to Thai and work in processing factory, and in farming. For men, they work at fishing boat and as well in farming. In ***Shaw Daww Maw***, about 10 families, including all family members, migrated to Thai and earn their living. Male individual as well migrated to Thai and work as wages workers in rubber plantation, factories. Some work as loading goods, and waiter. For female individual, they worked in rubber plantation, factories. They also work as waitress at restaurant.

In landscape area, for those who went and work in Thai side, usually, they engaged as wages workers and mostly are youth. Some they go and work as day return but some they stayed at authority approved villages.

In contrast, ***Mine Thway (U Yin Gyi)***, there was huge incoming migration flowing into the village follow with their family members. The village was situated on area where mountain, beside river which goes into the sea, that was rich with forest products. One of the main sources of income for this village was charcoal making business[57] and it has been operating about 30 years[58] now. This charcoal making business was operating in huge sector with over 200 ovens in the area. One of the team members, the FD staff was surprise to see the ovens[59] and this is the first time he has been to this village. Migrant families from nearby villages came and work on the island, together with their children enrolled at State Primary School (Attached) SPS(A). Even though the village is not registered under MoHA, but the village has SPS(A). What the villagers mentioned that later this year (2016), charcoal making has stopped operating, migrant workers together with their family leave the village and today instead of 70 families, only 43 families member left and for this 2016 school intake year, it decreases to half of school enrollment.

In every FGD conversation conducted in ***Thayawthadangyi*** Island, study show that there was no people movement and cope with situation that they have encountered.

E. Drug related issue in coastal and Island area

The long civil war and military rule have stimulated drug production, trading and consumption, and marginalized ethnic community. Beginning in 1989, some ethnic armed opposition groups, including KNU, signed ceasefire agreements with the military government. In many border areas, the ceasefires subsequently brought an end to the fighting, curtailed the most serious human rights violations, and created a more favorable environment for community development[60]. Since then, drug trading has booming and follow with high consumption and was extremely grown openly within a decade. Not only for drug consumption in ***Tanintharyi*** was high but it applies to the whole country. Those who are residing along the coastal and on island were fishing community and these communities, especially male, are the highest communities that consume drugs, ***Myinn Say***[61] (local term). Although one of the basic need, food price has increase day by day but the price of drug is going down and can access easily in every places[62].

In previous day, the price per amphetamine is Kyat 5,000 and now a day the price has gone down to Kyat 1,500. The price of each pill cost slightly lower in high trading villages, compare to low trading village and depend on good accessibility to town. It also sold around to the fishing boat in the sea as well. When the owner of the fishing boat could not provide pills to the fishermen, they could not get labour and regards to this in terms of wages, the boat owner has to provide both the drugs as in advance labour charges. These drugs were carrying on boat and go to fishing boat to boat and selling like vendor. The effect of using ***Myinn Say*** was, if a person use one pills, he can work continuously the whole night and the whole day and his work done was perfect without any fault or wrong doing. Usually, the owners provide those pills in return of their complete work done. Till to date the central government is unable to provide quality treatment and prevention to the addicted patient yet.

[57] For those who come from outside and work on the business, the owner give payment with one third of the product. But they deduct charges for transportation and food.

[58] FGD with ***Mine Thway (U Yin Gyi)***

[59] Myanmar length (***Taung***) 12 x 10. 1 ***Taung*** is equivalent to 18 inches.

[60] Tom Kramer, TI, The current state of counternarcotics policy and drug reform debates in Myanmar, 2016, Roreign Policy at Brookings

[61] WY/Myin Say/ Amphetamine

[62] Tanintharyi MP discussion at Hluttaw on 7 August 2016

Among the visited villages in coastal area, village like ***Pann Zin*** and ***Min Gaung Hsay***, dare to discuss openly on drug issue but village like ***Shaw Daw Maw***, ***Mine Thway***, ***Won Taung, Don Pale Aw,*** and ***Don Linn Lun*** has openly spoke out and discussed on drug, amphetamine[63] pills, issue and almost all the families were suffered from this drug addicted user within their families member.

What the fisherman perceived that if a person use one pills, he can work continuously the whole night and the whole day and his work done was perfect without any fault or wrong doing. Usually, the owners provide those pills in return of their complete work done.

In reality, when they become addicted to it, they could not earn enough money for the family as two third of their income has go to using of drug. The rest of the amount provide to the family is not enough to survive for the whole family and at last women became economically main income earner then. They have to engage in income earning for the family survival. When head of household or one of the family member was addicted to drug, if there any a quarrel encounter in the family, neighborhood tried to avoid from conciliate to the family that could gave harm to those who came and help them. What the elder from the FGD mentioned that if one went to sea for fishing, one could not avoid from drug and as well now a day, drug can get everywhere in the area.

Those who earn their living on catching Crab with trap (□□□□□□□□□□), this type of catchment has to work only at night time and because of night time, only male are work on this. To resist from cold and dozing, they used the drugs for having alert at all time and they are the main user in coastal area.

In previous day, what the local community from ***Won Taung*** mentioned that amphetamines were used only by rich person because of its high price. In 2012-2013, people from every level start to use as the price of the pill has going down dramatically, and in 2015, drug consumer rate has going up noticeably. Now a day, not only them but youth start to test on drugs and follow with addiction to it. The minimum age of start to use drugs are 15 and above and 99% was male. What the FGD group mentioned that about 80% of the male community were addict to amphetamine. Even though the village is close to town (Myeik), it happen to be like in the deep forest, where none of were reachable. There was no awareness on drug education or any of it in the area.

In ***Shaw Daw Maw*** village, during the team visit, it was found out that 100 HHs head's brother was ill by over usage of drug and follow with suffered from psychological disordered. The family left him and the sister has to take care of him. In ***Mine Thway*** village, the ex-100 HHs head's brother-in-law was drug addicted and the sister has to take responsible to support to the family in terms of school continuation of the children, and food for the family.

Another type of drug powder, which produces from ***Mitragyna Speciosa herbal***[64] local term ***Baisar Hmont*** □□□□□□□□□□□□□□□[65], leaves that turn to make it into powder. What the local community express that, ***Bainsar Hmont*** was not that seriously effect to the family and it does not give any complicated consequences being using it. During the team visit to ***Shaw Daww Maw***, the team has a chance to stop at ***Shaw Daww Maw*** police station, it was found out that about 100 sacks of ***Bainsar Hmont*** was seized and kept at the station. Only boat man were caught but could not identify the owner and it was found out that even the drug user were too close to the village head level and they could not control or prevent from flowing of drug to the communities.

There was an issue of seizing on drug trading that could reach only to those who were at the user and small seller level and were seized but not to the big trading level. The issue has been raised in parliament by the Tanintharyi MPs and as well ***Kyun Zu*** MP as well submitted the (3) issues at State Parliament: -To provide drug related awareness program continuously in the community; To establish prevention and treatment center; To take action on drug traders and their trading routes.

The percentage of alcohol addicted was very much lower than that of drug addicted in the visited area.

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[63] Amphetamine pills are also known as Myinn Hsay or WY or icy pills, with different type of brand. Among them, icy pill price is the highest.

[64] https://en.wikipedia.org/wiki/Mitragyna_speciosa

[65] This type of drug powder was made from a leaf ***Mitragyna Speciosa*** that makes it dry and turns into powder. The user mixed with Red Bull energy drink and they call it compound and drink. What the local community mentioned that this kind of drug was not that harmful as amphetamine pills and the price as well not expensive than that of amphetamine. In previous days, this powder was used for curing fever and weakness.

After NLD government step on, as per 100 days initiation program that apply to the whole country, several drug related cases were seized but not reached to main traders and trading level yet.

VII. 6. GENDER AND ENVIRONMENT

A. Gender dimensions of fisheries

Capturing fish in coastal and deep-sea waters is almost always a male sphere, and carries with it high work related risk health and safety. Women in fishing households do perform preparatory work, such as mending nets, although their contribution is often "informal" and rarely remunerated. Women role are most prominent in small-scale and industrial fisheries, which is in post-production, processing and marketing. In study area, post harvesting, shrimp paste making is only done by women.

Gender roles and responsibilities are evolving especially to those FHH. In this study, as per field data, FHH means to widow and it also apply to woman with husband that needs to take care of family economic income. But when it comes to HHH, as per culture and tradition, even though women are responsible for economic income, they let their husband to be in HHH position. Some husbands are in HHH position, but only work for social activity in the village or drug addiction or suffered from long term illness. In some parts of the community[66] squid catching is done by women fish farmer that follow with their son to the sea. But much of women's contribution to fisheries is "invisible". Gender discrimination stems from the low value attached to women's work and is perpetuated in their limited access to credit, processing technology, storage facilities and training.

In the study area, there is none on post production and storage mechanisms and lack of training, many traders are unable to keep their products fresh and regards to this they have to sell with low rate to the traders. This found in the poorest fishmongers community in the process of fish value chain with no or little access to market information.

B. Gender dimensions of forest management

Women have close ties to communal lands. This is where they gather fuel wood and forest plants for use within the household. Depend on their origin of the residential area, livelihood pattern also different from places to places. ***Thea Phyu*** village was once relocation village and most of the relocated villagers were migrated from ***Kyain Chaung*** □□□□□□□□□□□□ village. During FGD with ***Thea Phyu*** communities, studies found out that they want to go back and work on their orchards at their old village, where it was located inside PA and were not allowed. Their old village was about (3) miles from ***Thea Phyu*** village. Their attachment to origin of land was very high.

> *"…it is easier to earn our living in our old village but now we have to move to this area that makes us difficult to survive, mixing with other (migrated) community…"*
>
> *Woman FGD participant, **Thae Phyu** village*

Because they depend on these resources, women need to be involved in decisions about how communal lands are managed. Ignore the roles of women as resource users and conservation programs will fail to address the needs of those very individuals who are key to the sustainable use of the environment.

Rural women and men often have high knowledge of forest resources and different roles in tree and forest management. Women practice traditional agro-forestry production systems, such as home gardening, and harvest and sell wood and tree products and forest product such as honey as part of small-scale enterprises. They are mainly responsible for collection of fuel wood for the household, and of plants used as food and medicines. Men are involved more in high-value activities such as cutting timber. In the study areas, apart from wood cutting and trading, there was no noticeable task done by both male and female that could depend on being their duration of settlement in the area and their income was mainly derived from forest product.

[66] La Ngan community, the Moken

As per government land use policy, land is owned by the state, while local men have rights to trees and women to tree products. It was found out that trees and forests are more important to rural women's livelihoods than to those of men. In ***A Mut 9*** village, women harvest forest products for food, but trees are controlled by men, who use as timber to make furniture[67] illegally to ***Thai*** through ***Maw Taung*** border crossing gate. Loads of trees trunks were trade from Maw Taung route and the whole villagers earned their living on this type of trading until last year 2015. Both men and women, access to forest resources is becoming complex and limited, as government action to protect forest threatened forest habitats by restricting human encroachment.

Restrictions on access affect men and women in different ways. Forests can be crucial to farming women's survival strategies. In ***Thea Phyu*** village, responsibility for caring for household members and household chores falls mainly on women, leaving less time for agricultural production. As a result, they are becoming more reliant on forest foods and income from traditional orchard. During conflicts and forced relocation time, displaced rural people become more reliant on forest products and services. Rural women are more attached to their place of origin than that of men.

> *"…I like moving here, which is easy access to Tanintharyi Town. In previous day, walking is only mode of transportation but now it easier a lot and I like to live here…"*
> *Man FGD participant, **Thae Phyu** village*

Given their responsibility for meeting household food and fuel needs, depletion of forest resources increases burdens on women especially. A study in ***Thae Phyu*** found deforestation and forced relocation was forcing women and girls to walk more distance to collect fuel wood. On the other hand, fuel wood scarcity has led to a reduction in the number of meals cooked in poor households.

C. Gender division of labour

While women work inside and outside the home, men work almost exclusively outside the home. Women's responsibilities include housekeeping, cooking and fetching water and wood. Men have primary responsibility for fishing; harvesting; maintaining equipment; hunting; and gathering.

In the process of making shrimp paste, women, by themselves recognize that they are supporting men's work but believe that they are dependent and jobless. Concerning to shrimp paste making process, while male work for 16 days in a month, female work 18 days per month. Male usually go for catching prawn, brings back to village and put it on rack to make it dry. On the other hand, female make it dried, grind and this process make for two times that has to work two more days to get final products.

Table (5): Gender activity analysis chart: activities related to biodiversity management

Activities	Woman	Girls	Man	Boys
Shrimp paste processing	X	X		
Shrimp catching			X	X
Crab catching (□□□□□□□□)	X	X		
Crab catching (□□□□□□□□□□□)			X	X
Collecting wood to make shelf for dried up shrimp pastes			X	X
Selling fisheries goods	X		X	
Wages workers	X*	X*	X	X
Wage workers in charcoal making process	X		X	
Grocery store	X	X		
Charcoal making	X		X	
Fish processing (dried fish)	X	X		
Diving for Pa Ge and Sea cucumber			X	

[67] Depend on stem of tree shape, they were cut into horizontal position to make it table and trade as it is without any finalizing the materials

Pealing oyster that attached on tree and rock in seaside mangrove forest	X	X		
Orchard (land clearing, harvesting[68])	X		X	X
Pealing beetle nut	X	X		
Plucking Ta Nyin leaves from forest	X	X		
Picking forest fruits (mango, jackfruit, durian, banana)	X		X	X
Upland traditional farming	X	X	X	X
Horticulture for business purposes (long bean, cucumber, yellow pumpkin, white pumpkin, etc.)	X		X	X
Domestic work	X	X		
Cutting tree stem in horizontal and trading to Thai		X		
Caring for young children		X		
Caring for elderly and ill people at home	X	X		
Attending community meeting	X		X (a few)	

**Depend job availability, women can get job but usually there is little opportunity for women wage workers within the village*

D. Female headed households (FHH)

As per 2015 Myanmar Census, a total number of conventional household in ***Kyunsu*** Township is 32,988 with (MHH = 27672, FHH = 5,316), which is 16.1% of FHH in the area. In ***Tanintharyi*** Township, total number conventional household is 19,929 with (MHH = 11,956, FHH = 7,973), which is 40.0% of FHH in the area.

The study shows that in all visited villages, FHHs are the most affected community compared with MHHs because of the burden to support the family and the restriction of not being able to leave in search of work. In MHHS, while women take care of household tasks, the men go out to look for work and food. Women are severely overburdened by the double responsibilities of household work and economic effort. Most FHHs are engaged in daily wages workers and some were with grown up children. For those with grown up children, they were more ability to earn living with the support from their children. Women in the community are involved in petty trade such as, selling fried snacks which they use income from to buy food for the family. Some of the women who have the least income amongst the community also go to town to work as labourers or daily labourers.

In ***Kyunsu*** Township, a total number of widowed was 5,410[69] with (F Widow = 3,941, M Widow = 1,468). In ***Tanintharyi*** Township, a total number of widowed was 3,821[70] with (F Widow = 2,874, M Widow = 947). Both the data show that female widow rate was (3) times higher than that of male widow rate.

Most of the FGD groups mentioned that the husband were died with drawn by excess use of amphetamine/ alcohol; high usage of amphetamine to resist from cold and water pressure and for long diving hour in the sea that follow with stroke and other complication; decompression sickness claimed many casualties among the Moken; danger of ***Salon Kyauk***[71] fish, that could killed a person at the incident by dipping into one's body; and normal illness such as malaria, high fever, and etc.

Female widow from fishing family, they could not take responsible on family income and welfare and for those who could not continuous work on existing fishing business, they sold their fishing materials and engaged as wages workers. Some, their grown up children continue to work on existing business (shrimp paste making including catching). The study shows that, re-married rate in the coastal area for female widow was very low but male widow remarried rate was high[72]. In contrast to Moken female widow, re-

[68] Plucking coconut, mango, jackfruit and picking beetle nut, durian

[6969] 2014 Census report volume 3-F (Tanintharyi), Pg. 34, Table B-3: Population aged 15 years and over by marital status district township and sex

[70] 2014 Census report volume 3-F (Tanintharyi), Pg. 34, Table B-3: Population aged 15 years and over by marital status district township and sex

[71] A long thin fish that fly over water, about 6 to 12 inches long

[72] FGD with villages from Auckland Bay

married rate was extremely high while their livelihood was mainly depend on sea fishing and they could not survive with their children after their husband died[73].

In ***Pann Zin*** village, an estimate of 50 HHs were FHHs, and their husband mostly died from malaria, drown in water while went for fishing and some are died with stroke. Out of an estimated 50 FHHs, about 30 FFHs were widows that earn living as wages workers. Those who have family member with working age, they depend on their children earning and for those who do not have working age, they engage in wages workers.

In ***Minn Gaung Hsay*** village, about 20 HHs[74] are FHH. About 10 HHs, although they have husband, still they have to lead for the family economic income and most of those husbands were drunkard and do not support for family income but asked for alcohol fees.

In ***Shaw Daww Maw*** village, the study found out that during FGD, one of the male village elder mentioned that almost all the household were FHH. Some are widow and some are not, while those women are economically leading for the family income, in regards to absent of male partner or male partner earning could not count for the family consumption, they become automatically FHH as the consequences of addicted to drug. About 40 household were FHH. They earn their living on fishing as a family owned business which could survive day to day income.

In ***Won Taung*** village, whenever there is a village meeting, usually women are the one who mostly participated. While the meetings were filled with women, the village head let the women to go back and asked for the head of household to attend instead. What the excuse from male partner of FGD participant mentioned as follow.

> *"…they are (wife) are very curious and whenever I came back from the meeting, they want to know this and that which I've heard at the meeting. So later I never go and I let her go and let her listen directly…"*
>
> *FGD,* ***Won Taung*** *village*

> *"…while he (ex-serviceman as well as village health workers) is participating in the village social welfare, his wife is the only one who lead for economic income…"*
>
> *FGD,* ***Won Taung*** *village*

In contrast, for the ***Moken*** FHH, while head of HHs accidently passed away, in return they were planning for remarried while their main livelihood was dependent on sea fishing. They themselves go for fishing, especially on squid in a small boat, but still they need someone to be on board, they might get difficulties if they do not have grown up children.

VIII. 7. COMMUNITY AND CONSERVATION

A. Knowledge of PAs and conservation

What the villagers understand that none of the trees can be cut down and if so they will seized and sentenced to imprisonment as per punishment. The communities do not have knowledge on PA or companies owned PA and have never seen boundary line for PA. There was no clear explanation on how PA was working and they never received related to conservation awareness program. There was none on PA implementation in the area, including replanting. Since villagers do not know about the plan, they do not aware with PA and they just earn their living on day to day basics.

But ***Shaw Daww Maw*** FGD group mentioned that they have knowledge on Auckland Bay PA and were denotified by FD in 2014. Today GNM start to initiate CF to the community but still their interest on the project was low.

The communities are worried on that they could not extract mangrove forest product, especially catching small black crab anymore from the forest, and this concern has come up from women participant. Being FHH, catching small black crab is the only income that could solve day to day food consumption. There is no-one providing awareness programs related to PA to the community. Weak

[73] FGD with ***Don Pale Aw – Salon Gone*** villagers
[74] FGD with ***Minn Gaung Hsay*** villagers

patrolling by FD/police and there is no or little coordination between governmental department and this makes the community more vulnerable.

In **Pann Zin** village, villagers do not know when and which area the PA has established and stated. Even though the sign post that mentioned of PA, but there has been cutting down the tree at nearby the post. The community does not know any of the implementation activities on PA related regulation and enforcement. The villagers have no or little knowledge on PA and conservation. The sign post that mentioned of prohibition of cutting tree but there is no law enforcement and they never have experience on awareness of PA that relate to conservation.

> *"… it mentioned that we are not allow to use the mangrove forest and there is a sign post that pin to the tree. But we, the villagers even cut the tree that pin the post…"*
>
> *FGD group from Min Gaung Say*

B. Worries on establishment of PA

Communities feel that the PA establishment and conservation will benefit for the community in long term period but they feel worried for limited pasture in the coming short term period of time. Although villagers were willing to participate in establishment of PA, while there is weak in rule of law, coordination among implementing stakeholder (community, concerning governmental department, business sector), it will be hard for the community to doing alone. Law enforcement is important for this implementation. If an outsider come and cut down the trees, being villagers with little power and with no evidence to take action, they could not enforce this initiation.

On the other hand, the community concern was that if they were entitled to involvement in the management of PAs, their concern was that they need to hold certain position to manage it. For example, if someone from outside of their community come and collect wood, in terms of stopping them from cutting the trees they need to have certain authority mentioned in a document or other evidence to control the outsiders.

In ***Shaw Daww Maw*** village, FGD groups have clear understand on PA but have concern on community livelihood, that limit to earn cash from the mangrove forest while they are depending on it. If PA has established in the area, they want the grantee to support for their LLH income and development assistant. And as well, if they were asked to participate in the establishment of PA, they will participate like others but they need to negotiate and coordinate to perform this task. Cooperation among the stakeholder to perform this task is critical for the community. On the other hand there needs to educate on PA awareness program among the community as there is very limited knowledge on PA.

Woman who earns her living on crab catching, she was worried that the establishment of PA could effect to her family survival as this could limit to her crab catchment in the mangrove forest.

> *"… if you are going to set up PA, are we not allow to catch fish, crab anymore? The food we eat for day to day is depend on the catch that we get. If we are not allowed to catch any of the fisheries, how are we going to survive then..."*
>
> *Woman FGD participant, Pann Zin*

တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင် သစ်တာဦးစီးဌာန
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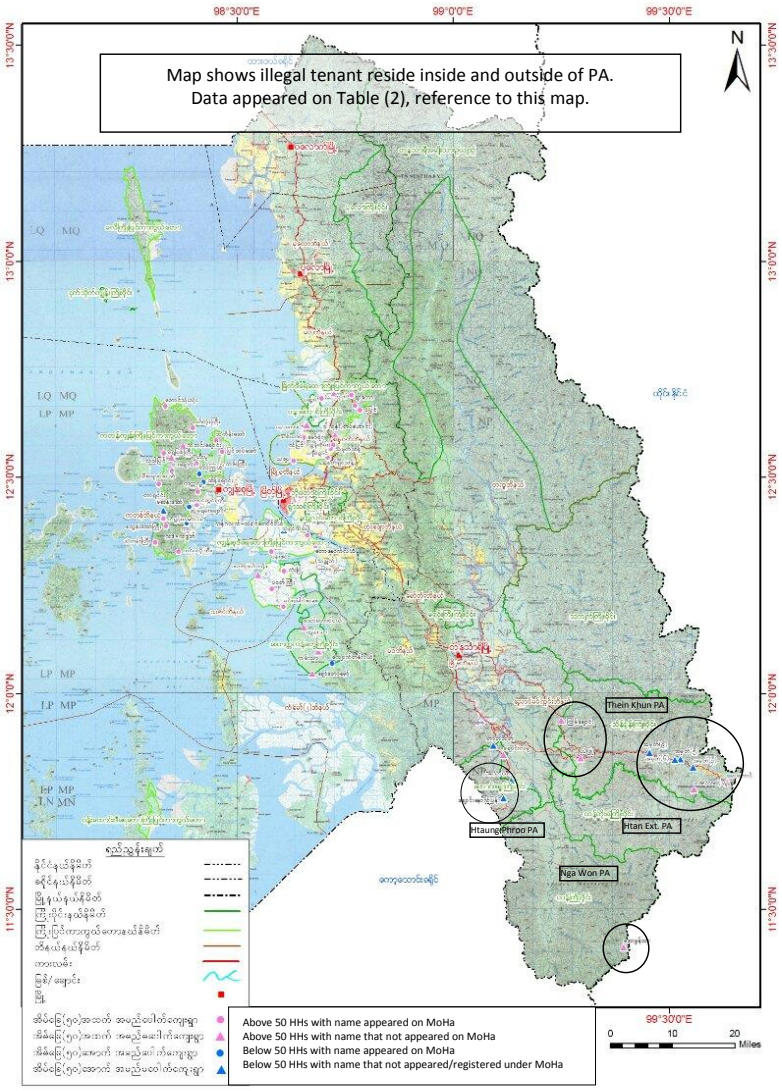

8. Recommendations for Community Engagement

Aim: mobilizing and facilitating communities to promote effective and sustainable protected area and natural resource management through effective communication. Note: in the context of this project, the term "protected area" refers to a wide range of legal and management options, including community-based natural resource management areas (eg LMMAs, CFs), community conservation areas, as well nature reserves and national parks. Therefore, the details of community engagement will vary with each specific situation.

Strategy	Process	Activities
Increase community participation in strengthening the sustainability of PA management	• In order to strengthen the sustainability of PA management, strong local Community Based Organizations (CBOs) need to be involved in the program • The project team should be aware that stewardship over PA management resides at the local rather than the state level, and that it is possible to improve rural livelihoods, conserve the environment and promote economic growth at the same time. Increasingly, the idea is becoming more widely accepted that excluding people from their traditional livelihoods is neither realistic nor ethical	• Identify CBOs in the area • Assign tasks for operation • Create mechanism for connection and cooperation among CBOs • Conduct community mobilization activities at the community level using development tools
Enhancing the rights and capacity of the community	• Inclusive approach to capacity development for all stakeholders • Community awareness, legal framework development • Operational mechanism for communities to participate in and benefit from biodiversity conservation and development • Conduct training and ensure that both men and women participate equally • Set up exchange program to motivate their participation	• Provide a series of trainings to the community, followed by refresher course • Prepare capacity development program • Disseminate knowledge to the villagers • Raise public awareness in implementing the R2R program • Conduct various types of training that link to community mobilization, gender awareness and biodiversity conservation • Implement exchange program
Increasing community participation in Planning, Implementation, Monitoring and Evaluation (PIME)	• A community participatory planning approach • Joint monitoring and evaluation approach • Community involved throughout the process of PIME	• Prepare community plan using development tools • Prepare M & E mechanism including reporting system
Provide alternative means of livelihood to be made available for the local people to reduce over dependence on environmental resources	• Facilitate the development of alternative livelihoods for local communities • Allow local communities to make traditional use of natural resources in PAs and practice their livelihoods based on consensus approach to planning, zoning and monitoring requirements	• Small grant program for community based entrepreneurs • Undergo brainstorming and consultation with community
Keep communities informed throughout the process of project implementation	• Practice transparent approach to project implementation	• Create accountability mechanism • Set up communication mechanism • Conduct meetings in public spaces • Regular information sharing • Hold meetings to discuss experiences and lessons learned

Cooperation and communication	• Cooperation with concerned local environmental groups	• Invite local environmental organizations to stakeholder meetings • Support LNGO activities through collaborative activities and small grants

Effective communication

- From the beginning, a two-way process of information exchange should take place. The local community should be duly informed about the project intentions and, on the other hand, the implementing agency will require reliable socio-economic data for planning. First-hand information from the community on its problems, needs and expectations will be most valuable and provide an opportunity for the project staff to gain people's confidence. This was initiated during the PPG phase, through consultations and baseline information assessment in a selection of villages in the project landscapes.

Mobilizing the community: strengthening/restructuring and/or forming Community Based Organizations (CBOs)

- Recognize that participatory processes can be costly, time-consuming, labor-intensive, and confrontational, and can make decision-making difficult.
- Identify leaders that are well recognized and respected by the community in the organization of participatory structures for communities. The local leaders, if they are well informed and motivated, will become the frontline promotion agents of the project. They should have the main role in organizing the community.
- Study existing current structures, practices and interests, etc. of local groups and/or CBOs.
- Restructure or strengthen existing CBOs/ groups and provide them with clear roles and responsibilities to carry out PA management related activities. Locally relevant structures and practices of CBOs/groups should be adopted for successful operationalization within the local context. These organizations should represent the community in the management of the resources, using agreed guidelines and rules, and should be different from traditional models of wildlife management that have favoured the exclusion of users from the resources, imposing restrictions, and resettling people outside protected areas. It must be clear why the CBO/group exists, what it is expected to manage (money, staff, wildlife, CF, partnerships etc.), and how it intends to achieve its goals (objectives).
- Identify the natural resources that the community want to protect and/or manage as part of PA management
- The participation of women in the key decision-making process of CBOs should be obligatory. In order to do so, a certain percentage of total membership should be reserved for women as a group formation criterion.
- If the community is not organized at all, an ad hoc group will need to be promoted, bearing in mind that the most successful conservation efforts have been those in which the grassroots organizations have been fully involved in programming and implementation of the program. The implementing agency's role is then limited to the necessary technical and financial assistance.

Increasing community participation in PIME (Planning, Implementing, Monitoring and Evaluation)

- A top-down approach in planning leads to projects and programs in which the community is often reluctant to be involved or views such activities with suspicion. A community participatory planning approach is desirable from the beginning, by establishing a dialogue with community leaders and discussing with them the tentative plans and options.
- Use participatory tools such as seasonal calendar to identity community activities by season, Venn diagram to understand the stakeholders and their levels of influence on the project, time wheel for both man and woman to know division of labor within the households.
- Encourage participation by demonstrating the value of playing a part in the planning, implementing, monitoring and review process, and illustrating the benefits that can be gained. This is particularly critical because the local community does not have strong traditions of participation, especially those initiated by government institutions that have usually been led by a top-down approach.
- The local community are given the opportunity to participate, to have full access to information on policies, issues and development plans, and the freedom to discuss issues with all stakeholders in which their views are fully considered.
- Support short term actions which respond to the needs of community, because conservation and restoration efforts are most often long-term.
- Communities might need the improvement of a road or of a water supply system and or innovative livelihood options, and this may call for cooperation with other government and or development agencies if those are outside of the project mandate.

- Support exchanges: Cross-visits for community leaders among PAs for learning and sharing experiences

Partnership with other organizations who have enriched experiences in working with CBOs

- Explore existing development organizations which have experience in community participatory planning processes in order to strengthen the sustainability of PA management in the target areas for joint implementation or and cooperation/ networking.
- Collaborate with professional agencies that have capacity to manage community participation and biodiversity resources based on innovative approaches and methods
- The following CBOs and NGOs are some of the community development agencies working in the area:
    - Environmental INGOs: FFI, WCS
    - Local Environmental NGOs:
    - Development INGO or NGOs (e.g. World Vision sub-contract to LNGO/CBO)
    - Karen environmental and development organizations (KNU's development organization, Karen Environmental and Social Action Network[75] (KESAN), Karen Development Network[76], Karen Women Organization[77])

Incentive mechanism

- The incentives should be tools to remove the constraints to development which prevent community participation in PA management efforts, such as lack of awareness of the benefits of conservation measures, poor financial capability, lack of interest in long-term investments, land tenure instability, inadequate infrastructure and marketing services and poor access to credit and production inputs.

The following basic principles should be considered in conceiving an incentive scheme:

- The activities to be promoted through conservation incentives should be well articulated with other support elements, within a rural development framework
- Incentives in cash or in kind should have a catalytic role and should therefore be temporary until the villagers can acquire a certain degree of self-reliance through improved sources of income.
- Incentives in creating small scale businesses
- Application of incentives through grass-root organizations will be more advantageous in terms of cost-effectiveness, will generate community initiative and will promote a cooperative attitude from the participating villagers.
- Incentives to fulfill their purpose should neither be considered relief, government gifts, wages or pressure instruments; participation should be voluntary and in good terms of partnership between government and villagers.
- Stability of land tenure, appropriate marketing channels and prices for farmers' products and well organized grass-root groups are some of the vital prerequisites to ensure success of a conservation incentive program.

The Change Agent: Community Facilitators

- Assign community facilitators (at least 30% should be women) to facilitate the participatory community processes. A participatory program will require efficient staff with social sensitivity and with a natural ability to communicate with the people, to educate and to generate interest. During the initial stage the key element is community facilitators. He/she will inform about the program and interact with the community as it responds to it; he/she will motivate the leaders, help establish grass-root organizations, identify the needs and expectations of the community and anticipate possible problems and constraints.
- After program launch, organize training and extension activities for the leaders and for established groups with the assistance of technical staff and instructors. Contact with women's groups and their leaders may require since men and women have different needs, interests and capacities to carry out project activities

[75] http://www.kesan.asia/
[76] See http://www.kesan.asia/index.php/links/karen-peace-support-network, https://www.npaid.org/Our-Work/Countries-we-work-in/Asia/Myanmar/Development-cooperation-in-Myanmar/Partners-in-Myanmar/Karen-Development
[77] https://karenwomen.org/

- Provide both technical and administrative support to the Community Facilitators to be efficient as a means to operate. Adequate transportation, audio-visual aids and training materials, tools and equipment for demonstration and extension are needed. A crucial element for the success of the programme is highly motivated and devoted field staff, which have the confidence of the community and strong backing from the central line services.

Community

- Priority should be given to assess and develop opportunities for communities to benefit from ecosystem service provision in PAs and watershed forests.
- Enhance the rights and capacity of local communities so that they will actively participate in biodiversity conservation and protected area management; this requires community awareness, livelihood improvement, legal framework development, and operational mechanisms for communities to participate and benefit from biodiversity conservation and development, particularly in PAs. Allow local communities to make traditional use of natural resources in PAs and practice their livelihoods based on consensus on planning, zoning and monitoring requirements.

Effective Communication with the community

A certain level of staffing is required both in the field and at central level. This includes program / project officers for livelihoods / gender / rural development at the central level supported by gender and community-inclusive organizational policies and strategies. At the community level it should include the following:

- Community facilitators
    - Closely working with the community in management of biodiversity conservation
    - Report bi-weekly activity to the program officer
- CBOs
    - Establish rules and regulations for CBOs
    - Identify roles and responsibilities for CBOs and members

Capacity building

- Provide training related to community mobilizing, facilitation, forming CBOs, gender awareness,
- Appoint Focal Staff for community participation who have experience in community mobilization, facilitation, CBO formation, and sufficient working knowledge on cross-cutting issues such accountability, gender, women rights, etc.

Gender related capacity so that they staff are able to:

- Develop a rationale for the inclusion of gender in community based conservation
- Analyze women's and men's roles and their relationship to the management of natural resources
- Analyze women's groups and their potential contribution to conservation
- Articulate the importance of women's participation in conservation efforts and the barriers they face to participation, and implement ways to remove the barriers

9. Recommendations for Gender Mainstreaming

General action points to mainstream gender perspectives into biodiversity conservation and management are given in the table below.

Action Point	Explanation
Document the differential knowledge of women and men about biodiversity resources	Women and men have complementary knowledge about biodiversity resources which reflects their shared responsibilities. Gender disaggregated data need to be documented on the conservation, use, and management of biodiversity; and women's and men's differential needs and control over resources.

Develop clear guidelines, tools and methodologies to mainstream gender into biodiversity management	The systematic integration of gender perspectives into biodiversity research, programs, and management requires tools for gender analysis that can help capture gender gaps and inequalities, as well as ways to address them
Acknowledge and respect the role of women and men for biodiversity management	Women from many indigenous communities play an important role in preserving high quality seeds of crop plants
Acknowledge and promote women's traditional knowledge in sustainable management of local-level biodiversity resources	Women's practical knowledge about herbs, medicinal plants, and wild greens needs to be promoted in the light of the role women have in passing on traditional knowledge to their children, family, and entire communities.
Promote interventions that enhance women's contributions to the health and wellbeing of the family	Women can identify, select and grow crop varieties with great nutritional value. They also make important decisions about conserving less common species for future use. Technologies to minimize women's workloads should be promoted and policies constraining their role in food security reviewed.
Recognise women's and men's adaptations to climate change	Certain livestock breeds used in traditional transhumance practices are able to survive a wide range of climatic conditions. The home-sites and kitchen gardens maintained by women are repositories of crop genetic resources and their wild relatives. These resources form the bases for adaptation.
Increase and encourage women's participation in decision making related to biodiversity conservation	Women's capacity to participate in management of local, community based institutions implementing conservation initiatives should be increased through increased access to information and equitable participation in training and extension services.

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Annex 15

Baseline Report on Seascapes and Marine Resources

-See separated file-

Annex 16

Baseline Report on Landscapes and Terrestrial Resources

-See separated file-

Annex 17a:

Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi

Biodiversity Knowledge Tools and Platform Assessment

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April 2016

TABLE OF CONTENTS

1. CONTEXT FOR THIS REPORT

UNDP Myanmar works closely with the Ministry of Natural Resources and Environmental Conservation (MONREC)[78] to improve environmental governance in Myanmar. UNDP developed a Project Identification Form (PIF) on "Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi[79]" with guidance from MONREC and consultations with relevant line departments, Tanintharyi regional government and partner NGOs (Smithsonian Institution, Green Economy Green Growth - Myanmar Association and Fauna & Flora International). A Project Preparation Grant (PPG) was subsequently secured to prepare a fully-fledged project proposal. This report constitutes one of two deliverables of an International Biodiversity Information & Monitoring consultant engaged by UNDP to assist development of the project's third component: Emplacement of the National Biodiversity Survey (NBS) framework.

The rationale for the third project component stems from the recognition that Myanmar urgently needs a strategy for acquiring and distributing biodiversity data, and for building the institutional, technical, human, and infrastructure capacity needed to support biodiversity monitoring and decision-making. In focusing on these challenges, the third project component consequently targets systemic and institutional capacity development for generating and applying biodiversity knowledge. To this end, a systematic biodiversity information management system will be established in Tanintharyi for potential subsequent adoption at the national level and a range of training programs will be institutionalized to develop regional and national capacity[80].

2. SCOPE OF REPORT

This short report comprises a brief review of existing capacity and infrastructure for creating an open access biodiversity data platform in the Tanintharyi Region. This is interpreted in terms of capacity for management and sharing of biodiversity information, including the use of remote sensing (RS) and geographical information systems (GIS). As such, the narrative describes the current lack of sufficient hardware and software for managing, maintaining and distributing geospatial and biodiversity data. This was compiled through literature review, correspondence and consultations with project stakeholders during a visit to Myanmar in March–April 2016 (Annex 2). Emphasis is placed on Myeik district of Tanintharyi Region, the proposed location for many of the projects efforts. Specifically, the report

- Describes existing capacity that could be utilized for storing, managing and distributing biodiversity information to a broad range of users;
- Assesses existing skills and software that could be utilized in biodiversity information management and identify critical gaps;
- Assesses potential user groups for the biodiversity knowledge platform and identifies generic tools that would be useful through the platform;
- Proposes steps and activities for project support and implementation (within the context of other activities proposed by the third project component); and,
- Proposes costs associated with building the infrastructure and capacity needed to operate a widely-accessible biodiversity data platform (also within the context of other activities proposed by the third project component).

[78] Formerly the Ministry of Environmental Conservation and Forestry (MOECAF).
[79] The projects land/seascapes and PA system are depicted in Annex 1.
[80] Project Identification Form 5427: Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi.

3. EXISTING HARDWARE, IT SYSTEMS AND SKILLS FOR BIODIVERSITY INFORMATION MANAGEMENT

3.1 Government Agencies

Recent assessments suggest that the greatest capacity for managing and distributing biodiversity information, particularly RS and GIS data among government agencies in Myanmar lies in the Ministry of Natural Resources and Environmental Conservation (MONREC). The Planning and Statistics Division of the MONREC Forest Department (FD) includes a RS/GIS section which provides data and services to other government agencies on a case-by-case basis (requiring approval at the DG level or above)[81]. This unit is the focal point for many RS/GIS capacity building and data development projects (e.g. National Land Cover and Land Use Mapping facilitated by EU and IMG, FAO REDD+). However, it reportedly lacks a system for database management and online data distribution and a database clearing house mechanism. Another strong RS/GIS unit exists within MONREC's Land Survey Department. This group focuses on aerial mapping at fine scales and resolution, providing base maps and data for other government agencies, although currently these data can only be shared in hardcopy format and at lower spatial scales and resolution, greatly limiting their utility[82].

The Nature and Wildlife Conservation Division (NWCD) of FD has particular relevance to the project's third component in holding the mandate for management of the national protected area system. However, NWCD lacks dedicated GIS officers and hardware and generally meets its mapping needs in house (although it can ask the RS/GIS section of the FD Planning & Statistics Division for assistance). It does however manage the Myanmar Clearing House Mechanism[83] although not the Myanmar Environmental Information Portal[84], which is managed by the Environmental Conservation Department of MONREC (see below). Although NWCD will receive capacity-building assistance from the GEF 5 project led by WCS, it is envisaged that related information management works will largely be restricted to the SMART system as this is seen as having already achieved momentum nationally [85]. Within the Tanintharyi Region, Myeik District FD lacks hardware and human resources for systematic information management (including RS/GIS) and as no mechanisms exist for information sharing, this is largely achieved by sharing of hard/soft materials on an ad-hoc basis. Much the same applies to the FDs in the Dawei and Kawthoung Districts.

The Department of Fisheries (DoF) within the Ministry of Livestock and Fisheries (MLF) also has clear relevance to the third project component in overseeing several conservation areas including the marine component of Thamihla Kyun wildlife sanctuary and two shark protected areas, crab protected areas and turtle conservation areas. Similar to NWCD however, DoF lacks capacity for systematic information management and RS/GIS in the form of dedicated hard/software and staff, though internal planning for capacity-building is reportedly underway. Within the Tanintharyi Region, Myeik District DoF similarly lacks hard/software and human resources for RS/GIS and systematic information management and as no formal mechanisms exist for information sharing, this is also achieved by sharing of hard/soft materials on an ad-hoc basis (the same applies to Dawei and Kawthoung Districts). DoF is expected to receive assistance for knowledge management and GIS capabilities from the GEF 'MyCoast: Ecosystem-Based Conservation of Myanmar's Southern Coastal Zone' project being developed by FAO.

3.2 Higher Education Institutions

Some universities under the Ministry of Science and Technology (MOST) appear to have GIS/RS capacity (typically geography departments) and in some cases even dedicated departments e.g. Mandalay Technological University.

[81] Civil society organizations are reportedly unlikely to be granted access to these data.
[82] Anon. 2013. Geospatial analysis training and strategic planning workshop in Myanmar. Smithsonian Institution, Green Economy Green Growth Myanmar & World Wildlife Fund.
[83] www.myanmarchm.gov.mm
[84] http://mya.gms-eoc.org/
[85] Pers. comm. Rob Tizard, Wildlife Conservation Society, March-April 2016.

This does not appear to include MOST universities in the Tanintharyi Region however, and within the region, Myeik University (under the Ministry of Education, MoE) likely possesses the greatest potential for partnering in the development of a biodiversity data repository and open access web portal, as it already delivers courses in RS/GIS as part of undergraduate and postgraduate curricula in Geography[86]. Even at Myeik University however, human and hardware resources for RS/GIS analyses and data management/sharing are sorely lacking[87] and the university website is also currently maintained by external consultants. Nonetheless, senior staff within nearly all departments relevant to biodiversity conservation (Marine Science, Zoology, Botany and Geography) have ranked both RS/GIS and information management systems as one of their top three priorities for capacity development[88] and FFI have supported training courses on GIS (including Orux Maps) for university staff in recent years.

More broadly, most universities (and ministries) in Myanmar require basic resources (e.g. computer workstations, GPS units, scanners and printers, along with software) for RS/GIS and the Tanintharyi Region is no exception. Other challenges include unreliable or insufficient electrical power to keep computers running and slow and limited access to the internet. Training is needed at many levels and across sectors, ranging from short to long-term courses, provided by in-country and international experts, to university degrees, to mentoring and hands-on project work. Measures are also needed to raise the professional status of geospatial work and encourage staff to become GIS specialists through financial/rank incentives and personal development opportunities. Further, as there appear to be no formal policies or mechanisms for information management/sharing between ministries, there is also a pressing need for a centralized spatial data clearing house to share GIS/RS data widely and facilitate cross-sectoral cooperation between the government, private sector and civil society[89].

3.3 Other Initiatives

Numerous online biodiversity data portals include information for Myanmar[90] and many NGOs in the country (particularly international organizations) routinely collect and employ biodiversity and geospatial data in their activities. Important examples of the latter[91] for the Tanintharyi Region include

- Fauna & Flora International: Has assessed mangrove, seagrass, coral reef, fisheries and terrestrial forest ecosystems (and critical species inhabiting these), associated threats and socio-economic conditions, and also supported gazettement, zonation and co-management of protected areas and locally managed marine areas within the Tanintharyi Region[92];
- Instituto Oikos: Reviewed the PA system in Myanmar[93] and is currently developing a geo-referenced database for coral reefs, seagrass, mangroves and terrestrial forests at Lampi Marine

[86] Although RS/GIS courses are absent from undergraduate and postgraduate curricula in Zoology & Botany, and in Marine Science curricula are restricted to a single elective course in the second year of the MSc degree.
[87] Pers. comm. Prof. Si Si Hla Bu, Rector, Myeik University, March 2016.
[88] See PPG National biodiversity survey framework assessment report, April 2016.
[89] Anon. 2013. Geospatial analysis training and strategic planning workshop in Myanmar. Smithsonian Institution, Green Economy Green Growth Myanmar & World Wildlife Fund.
[90] E.g. IUCN Red List, Global Biodiversity Information Facility, Global Forest Watch, Ocean Biogeographic Information System, Encyclopaedia of Life – Myanmar Biodiversity, ASEAN Centre for Biodiversity, among others.
[91] Additional examples are given in section 3.3 of the PPG National biodiversity survey framework assessment report, April 2016.
[92] This includes development of an atlas of spatial data to support land use planning in Tanintharyi which will be published in 2016.
[93] Instituto Oikos and BANCA. 2011. Myanmar protected areas: Context, current status and challenges. Milano, Italy: Ancora, Libri.

National Park, in addition to monitoring protocols for selected taxa (terrestrial mammals, coastal birds, hornbills, flying foxes, reptiles & sea turtles);

- Smithsonian Institution (SI): Has completed 50 biological/ecological research projects (and 150 scientific papers) in Myanmar, aiding in the discovery of >70 species new to science and thousands of new country records. Ongoing projects for the Tanintharyi Region include: biodiversity survey and database development, forest cover and land use change mapping, and supporting integrated seascape management[94]. SI has also made a national forest cover change map (2002–2014) available through the Myanmar Information Management Unit[95];
- Wildlife Conservation Society: Produced the KBA revision for Myanmar[96] and currently supports management of Tanintharyi Nature Reserve (including the SMART patrol system); and,
- World Wildlife Fund: Analyzed the proposed Dawei Industrial Development project and associated road to Thailand[97], this area of northern Tanintharyi being a target area for integration of green economy principles and natural capital strategies for the country program;

All of the above organizations consequently hold biodiversity datasets for the Tanintharyi Region and while some are reportedly shared with government partners, most are not publicly available. The table below summarizes the most important in-country initiatives currently providing open access to biodiversity information or RS/GIS data for Myanmar.

Name	Summary
Myanmar Biodiversity	New website created by several local and international NGOs (WCS, OIKOS, NYBG, TSA and Helmsley Trust) working on nature conservation in Myanmar. Provides a variety of information and (report) downloads on KBAs, conservation activities, habitats, plants and animal groups, biodiversity threats, events calendar (unpopulated) and recent news. Includes RSS feeds. << https://myanmarbiodiversity.org/#_about >>
Myanmar Clearing House Mechanism	Managed by NWCD within the Forest Department. Provides a variety of largely static summaries of biodiversity in Myanmar in text, list, table and chart form. Topics include ecosystem diversity, KBAs, forest cover, species counts, changes in species richness at selected sites, red-listed species, environmental laws and policies (including some downloads), focal points for international conventions, news items, links, databases for species and protected areas (3,604 and 46 records, respectively) and an interactive google-based map for nationally protected areas. << www.myanmarchm.gov.mm >>
Myanmar Environmental Information Portal	A new website supported by the ADB GMS Core Environment Program and managed by the Environmental Conservation Department of MONREC. Provides information and downloads organized in four categories – interactive charts, maps, e-library and news – accessible through a combination of menus, filters and search functions on 15 different themes including biodiversity, environment, forests, infrastructure and marine and coastal resources. << http://mya.gms-eoc.org/ >>
Myanmar Geospatial Database	A non-government initiative which reportedly began in 2013 to build capacity and facilitate access to essential hardware and software. However, no further information was available during the assessment as the website was offline.

[94] This includes registration of ≈300 fishermen in a digital database linking catch information to spatial data and trialing of vessel monitoring systems.
[95] In collaboration with EcoDev, http://geonode.themimu.info/layers/geonode%3Amyanmar_forestcoverchange
[96] WCS. 2013. Myanmar biodiversity conservation investment vision. WCS, Yangon, Myanmar.
[97] Helsingen et al. 2015. A better road to Dawei: Protecting wildlife, sustaining nature, benefiting people. WWF Myanmar.

Name	Summary
Myanmar Information Management Unit (MIMU)	Established by the UN in 2007 for the purposes of improving capacity for analysis and decision making for a wide variety of stakeholders, MIMU maintains a common data and information repository with data from various sources for a wide range of sectors and likely constitutes the most extensive source of RS/GIS data nationally. Includes interactive mapping tools, open access GIS data repository (via Geonode), technical guidelines, standardization, maps, publications and many other resources related to the geospatial technology sector. << http://www.themimu.info/ >>
Open Development (Myanmar)	New 'open data' website based on the widely-acclaimed site for Cambodia, recently expanded to cover several GMS countries, including Myanmar. Presently being populated by Phandeeyar (an ICT hub in Yangon), and currently includes a variety of datasets and publications for download, plus interactive maps with a range of layers for environment, infrastructure, energy, hydrology, demographics and agriculture. << https://myanmar.opendevelopmentmekong.net/ >>

4. POTENTIAL PLATFORM TOOLS AND USER GROUPS

To achieve evidence-based planning and address critical issues related to land and seascape management in the Tanintharyi Region, adequate natural science and social science information is required in a practical and accessible form.

Features associated with the more effective online information platforms typically include:

- An attractive and accessible 'front end' that minimizes text and simplifies navigation as much as possible by structuring content into intuitively meaningful categories, themes, menus and so on;
- Availability of framework or static content in Myanmar and English language;
- Interactive mapping tools, including a variety of data layers of interest to different sectors (and ability to produce and share customized maps), with downloads available for raw data and apps to allow offline use on mobile devices;
- An open source platform for sharing geospatial data and maps, accompanied by a data sharing and use policy and prescribed standards for data and metadata;
- Baseline database for habitats, species occurrence, populations, threats, status and other indicators for the lowest administrative level possible;
- Interactive chart tools[98], including a variety of indicators of interest to different sectors, with downloads available of graphic files and raw data;
- Libraries offering downloads of policy briefs, tools, technical guidance, reports and other publications, maps and other digital media (again structured to simplify navigation);
- Forums for news, announcements and other time-sensitive content, with RSS Feeds;
- E-lists for thematic groups (although these typically require moderation);
- Directories of contacts and useful links; and,
- Effective search functions (basic and advanced) for all of the above.

[98] Such as those provided by the Myanmar Environmental Information Portal << http://mya.gms-eoc.org/ >>

The majority of stakeholders consulted during the assessment (e.g. government agencies, education institutions and NGOs, see Annex 2) viewed the creation of a biodiversity data repository and open access web portal as important for facilitating collaborations and information-sharing, and ultimately, to improving capacity for analysis and decision-making. Partial exceptions included WCS, who viewed their own information management works as best devoted to supporting promotion and use of the SMART system (this being seen as having already achieved momentum nationally), and WWF, who were somewhat divided on the matter: some staff questioning whether such a platform has ever proven effective, others viewing it as helpful to improving the quality of EIAs in the Tanintharyi region.

Nonetheless, pending design, user groups of the biodiversity data repository and open access web portal could potentially[99] include

- Government authorities: Government (and Karen National Union) departments related to development planning, land use planning and natural resource management at the township, district and regional levels in Tanintharyi;
- NGO community: Comprising a rapidly growing number of civil society organizations undertaking and/or planning environmental conservation and sustainable development initiatives in the region[100];
- Research community: Researchers attached to higher education institutions (e.g. Mawlamyine, Dawei and Myeik Universities) and research organizations (e.g. Dawei Research Association, Myanmar Marine Science Association) within the region and institutions overseas;
- Media & civil society: Print and online media and local communities, natural resources user groups and committees within and surrounding proposed protected areas and locally managed marine areas in the region; and
- Private sector: Comprising agri-business (oil palm and rubber) and other natural resource sectors (oil, gas, mining, hydropower, timber and fisheries), industrial investors, tourism, ESIA companies and related associations[101] active or interested in Tanintharyi Region.

The extent to which different data holders will contribute to an open access web portal will ultimately depend on the costs and benefits associated with doing so. Open access platforms are an effective approach to data sharing, but their success also depends heavily on ease of use and existence of clear policies and release agreements describing the terms and responsibilities for data provision (including standards for data and metadata), ownership, maintenance, user access levels[102] and subsequent use, liability and attribution. Development of a carefully rationalized policy encouraging contributions and use across the broadest range of stakeholders is therefore essential to effectiveness of the open access web portal. Useful examples in this regard include the

[99] The 'Open Development Cambodia' initiative is a good example of an open access information portal with a diverse set of user groups << https://cambodia.opendevelopmentmekong.net/#!/ >>

[100] Summarized in section 3.3 of PPG National biodiversity survey framework assessment report, April 2016.

[101] E.g. Myanmar Fisheries Association, Oil Palm Business Association, Rubber Business Association and Mining Business Association.

[102] Typically required for sensitive data such the occurrence of commercially valuable and/or threatened taxa.

policies of the Ocean Biogeographic Information System[103], Encyclopedia of Life[104], Global Biodiversity Information Facility[105] and Open Development Cambodia initiative[106].

Ensuring that the web portal articulates effectively with existing databases and online platforms (section 3.3 above) is also an important design consideration. Use of globally accepted standards for species and protected areas related information such as the Darwin Core 2 (DwC) and World Database on Protected Areas (WDPA) formats is recommended and the ASEAN Centre for Biodiversity provides useful interfaces for encoding such data[107]. Further, as the third project component will also provide a framework for establishing and evaluating long-term conservation project outcomes[108], presumably through the open access web portal, adoption of associated tools provided by the 'Open Standards for the Practice of Conservation' initiative[109] is also suggested.

5. STEPS AND ACTIVITIES FOR PROJECT SUPPORT AND IMPLEMENTATION

The following presents a summary of yearly activities proposed to achieve the outcomes sought under the third project component.

Year 1, First Steps

- *Inception*: Identify and contract activities with key team members, including program coordination, training development, course instruction, survey coordination, database development/management and protocol development/coordination.
- *Capacity Assessment*: Building on the 2016 PPG National Biodiversity Survey Framework Assessment, elaborate specifics for training and survey priorities, key national and international partners and required agreements, timelines, and other requisite groundwork.
- *Biodiversity Survey*: Pilot survey for field training and to develop protocols for key taxa within the study region, working with a team comprised of subject experts, graduate students, MONREC staff, and national NGO staff.
- *Capacity Building*: Develop and deliver one training course/workshop covering subject matter identified during capacity assessment.
- *Biodiversity Platform Development*: Launch development of platform and protocols, data compilation.

Year 2

- *Management:* Review of Year 1, strategy development and plan adjustment as needed.
- *Biodiversity Survey*: Pilot survey for field training and to develop protocols for an additional key taxa within the study region, working with a team comprised of subject experts, graduate students, MONREC staff, and national NGO staff.

[103] http://www.iobis.org/node/639
[104] http://eol.org/terms_of_use
[105] http://www.gbif.org/terms/licences/data-sharing >> << http://www.gbif.org/terms/licences/data-use
[106] https://cambodia.opendevelopmentmekong.net/terms-of-use/ >> << https://cambodia.opendevelopmentmekong.net/disclaimer/
[107] http://chm.aseanbiodiversity.org/index.php?option=com_content&view=article&id=171&Itemid=171
[108] Project Identification Form 5427: Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi.
[109] http://cmp-openstandards.org/

- *Capacity Building*: Conduct two training courses/workshops targeting subjects identified during capacity assessment in Year 1. Begin developing plan for institutionalizing biodiversity training program within Myeik University.
- *Biodiversity Platform Development*: Continue development of platform and protocols, data compilation, integrating inputs from Year 1.
- *Data Distribution*: Prior to online portal launch, work to distribute data on existing, relevant platforms.

Year 3

- *Management:* Review of Year 2, strategy development and plan adjustment as needed.
- *Biodiversity Survey*: Pilot survey for field training and to develop protocols for an additional key taxa within the study region, working with a team comprised of subject experts, graduate students, MONREC staff, and national NGO staff.
- *Capacity Building*: Conduct two training courses/workshops targeting subjects identified during capacity assessment in Year 1. Continue developing plan for institutionalizing biodiversity training program within Myeik University.
- *Biodiversity Platform Development*: Continue development of platform and protocols, data compilation, integrating inputs from Year 2.
- *Data Distribution*: Prior to online portal launch, work to distribute data on existing, relevant platforms.
- *Portal Development*: Launch development of online portal for data distribution, online tools, protocol distribution. Assess equipment requirements, where it will be housed and maintained, and agreements needed.

Year 4

- *Management:* Review of Year 3, strategy development and plan adjustment as needed.
- *Capacity Building*: Conduct one training courses/workshops targeting subjects identified during capacity assessment in Year 1. Continue developing plan for institutionalizing biodiversity training program within Myeik University.
- *Biodiversity Platform Development*: Continue development of open platform and protocols, data compilation, integrating inputs from Year 3.
- *Data Distribution*: Prior to online portal launch, work to distribute data on existing, relevant platforms.
- *Portal Development*: Continue development of online portal for data distribution, online tools, protocol distribution. Work to acquire requisite data agreements and equipment.

Year 5

- *Management:* Review of Year 4, strategy development and plan adjustment as needed.
- *Capacity Building:* Begin implementing plan for institutionalizing biodiversity training program within Myeik University.
- *Biodiversity Platform Development*: Continue development of platform and protocols, data compilation, integrating inputs from Year 4.
- *Stakeholders Workshop and Evaluation*: Presenting protocols, databases, maps, and beta portal for feedback and improvements.
- *Portal Launch*: Testing online portal, continue development of online portal for data distribution, online tools, protocol distribution.

Year 6

- *Management:* Review of Year 5, strategy development and plan adjustment as needed.
- *Capacity Building:* Final implementation steps of plan for institutionalizing biodiversity training program within Myeik University.
- *Portal Launch*: Open online portal, continue development of online portal for data distribution, online tools, protocol distribution.
- *Emplacement of Biodiversity Platform*: Final steps for establishing platform for biodiversity monitoring data, maps, and protocols.

6. COSTS FOR DEVELOPMENT AND MAINTENANCE OF BIODIVERSITY DATA PLATFORM

The budget below proposes financial allocations for building the infrastructure and capacity to operate a widely-accessible biodiversity data platform. This assumes that the total GEF allocation for the third project component equals 1.2 million US dollars[110], and, because the biodiversity data platform is contingent upon other activities in the third component, proposed allocations are also included for these activities (see categories B–E below).

Excluding supporting costs (category A below), proposed costs for development and maintenance of the biodiversity data platform equal 185,000 USD or 35% of total activity costs (e.g. categories B–E = 533,000 USD). As this breakdown was created in consultation with just one project partner (Smithsonian Institution) due to time constraints however, further consultation and refinement is recommended. All figures are given in US dollars.

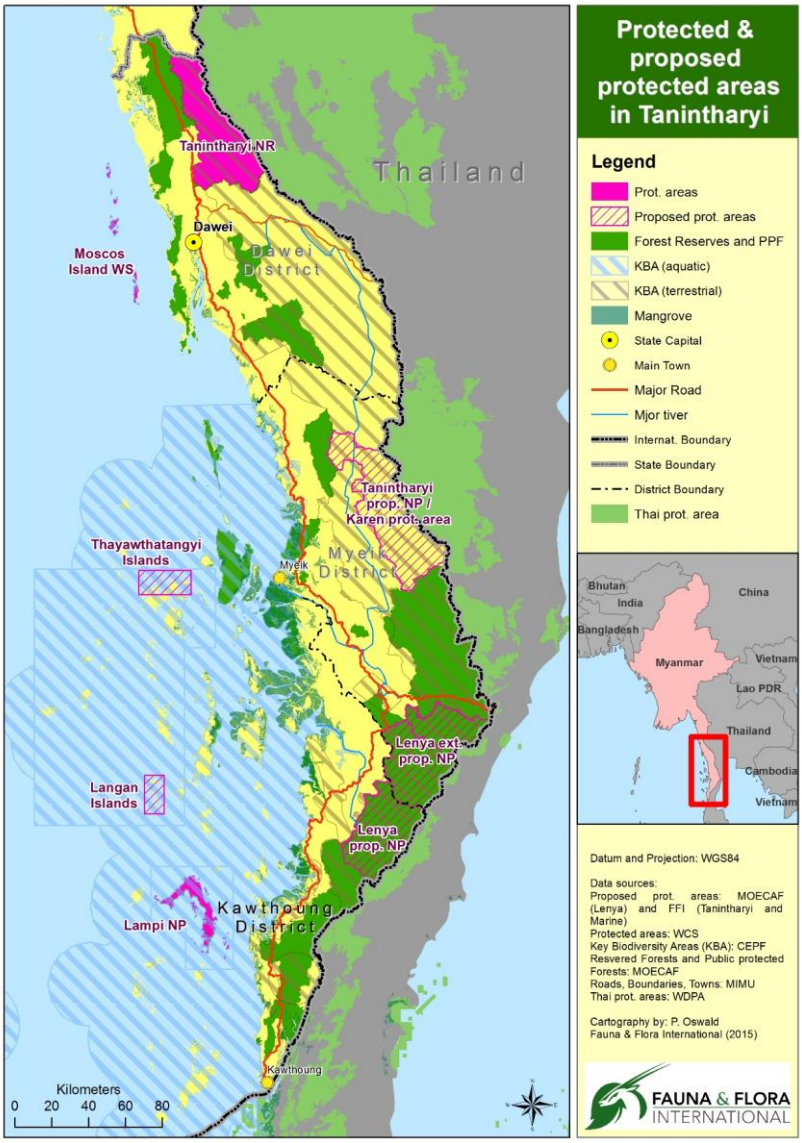
Category		Description
A	=	Cross-cutting costs, supporting all activities (B–E)
B	=	Capacity building programs
C	=	Baseline surveys (species richness/distributions)
D	=	Biodiversity data repository / web platform
E	=	Biological assessment/monitoring protocols

Cost Type / Description	Cat.	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Total
Staff								
Program Coordinator (50%)	A	15,000	15,000	15,000	15,000	15,000	15,000	90,000
Training Developer/Instructor	B	10,000	15,000	15,000	10,000	10,000	10,000	70,000
Survey Coordinator	C	10,000	10,000	10,000	10,000			40,000
Database Developer/Manager	D	10,000	10,000	10,000	15,000	25,000	25,000	95,000
Protocol Developer/Coordinator	E	5,000	5,000	10,000	10,000	10,000	10,000	50,000
Staff Subtotal		**50,000**	**55,000**	**60,000**	**60,000**	**60,000**	**60,000**	**345,000**
Travel								
International (10/year)	A	40,000	40,000	40,000	40,000	40,000	40,000	240,000
In-country transportation	A	10,000	10,000	10,000	10,000	10,000	10,000	60,000
Per diems: survey participants	C	5,000	5,000	5,000	5,000			20,000
Per diems: training participants	B	5,000	5,000	5,000	5,000	5,000	5,000	30,000

[110] Project Identification Form 5427: Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi.

Cost Type / Description	Cat.	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Total
Travel Subtotal		**60,000**	**60,000**	**60,000**	**60,000**	**55,000**	**55,000**	**350,000**
Supporting Costs								
In-country Admin Support, Office	A	20,000	20,000	20,000	20,000	20,000	20,000	120,000
Supporting Costs Subtotal		**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**120,000**
Equipment								
Field equipment	C	2,000	2,000	2,000	2,000			8,000
IT (computers, server, etc.)	D	10,000	10,000	10,000	10,000	25,000	25,000	90,000
Equipment Subtotal		**12,000**	**12,000**	**12,000**	**12,000**	**25,000**	**25,000**	**98,000**
Activities								
Training Courses	B	10,000	20,000	20,000	10,000	10,000	10,000	80,000
Field Surveys	C	5,000	5,000	5,000	5,000			20,000
Protocol Meetings	E					15,000	15,000	30,000
Activities Subtotal		**15,000**	**25,000**	**25,000**	**15,000**	**25,000**	**25,000**	**130,000**
Direct vs. Indirect Costs								
Total Direct Costs	B-E	157,000	172,000	177,000	167,000	185,000	185,000	1,043,000
Overhead costs (15%)	A	23,550	25,800	26,550	25,050	27,750	27,750	156,450
TOTAL		**180,550**	**197,800**	**203,550**	**192,050**	**212,750**	**212,750**	**1,199,450**

Annex 1 Project land/seascapes and PA system in the Tanintharyi Region



Annex 2 Schedule of consultations with project stakeholders in March–April 2016

#	Date	Location/ Travel	Activity / Item
1	27 March (Sunday)	Arrival in Yangon	▪ PM: Internal GEF-PPG meeting (UNDP & Consultants) to discuss mission plans and logistics
2	28 March (Monday)	Fly to Nap Pyi Taw Fly to Yangon	▪ AM: Meeting with IUCN & Forest Department Watershed Division ▪ AM: Meeting with Forest Department NWCD and Forest Research Institute[111] ▪ PM: Meeting with Department of Fisheries ▪ PM: Meeting with University of Forest Yezin
3	29 March (Tuesday)	Fly to Myeik	▪ AM: Meeting with Forest Department, Myeik District ▪ AM: Meeting with Department of Fisheries, Myeik District ▪ PM: Meeting with Myeik University (Rector & Marine Science, Geography, Botany & Zoology Department representatives)
4	30 March (Wednesday)	Fly to Yangon	▪ PM: Meeting with WCS
5	31 March (Thursday)	Yangon	▪ AM: Meeting with OIKOS ▪ AM: Meeting with FFI ▪ PM: Meeting with local NGOs at MERN office (MERN, FOW, BANCA, ECCDI, MSAM)[112] ▪ PM: Meeting with Head of Marine Science, Myeik University
6	01 April (Friday)	Yangon	▪ AM: Meeting with WWF ▪ AM: Brief (logistics) meeting at UNDP ▪ PM: Preparation of meeting notes
7	02 April (Saturday)	Depart Yangon	

[111] Representatives of the FD Training & Research Development Division were unavailable for the meeting.
[112] EcoDev (Economically Progressive Ecosystem Development) were unavailable for the meeting.

Annex 17b:

Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi

National Biodiversity Survey Framework Assessment

Neil Furey
International Consultant
Biodiversity Information & Monitoring Specialist
April 2016

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1. CONTEXT FOR THIS REPORT

UNDP Myanmar works closely with the Ministry of Natural Resources and Environmental Conservation (MONREC)[113] to improve environmental governance in Myanmar. UNDP developed a Project Identification Form (PIF) on "Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi[114]" with guidance from MONREC and consultations with relevant line departments, Tanintharyi regional government and partner NGOs (Smithsonian Institution, Green Economy Green Growth - Myanmar Association and Fauna & Flora International). A Project Preparation Grant (PPG) was subsequently secured to prepare a fully-fledged project proposal. This report constitutes one of two deliverables of an International Biodiversity Information & Monitoring consultant engaged by UNDP to assist development of the project's third component: Emplacement of the National Biodiversity Survey (NBS) framework.

The rationale for the third project component stems from the recognition that Myanmar urgently needs a strategy for acquiring and distributing biodiversity data, and for building the institutional, technical, human, and infrastructure capacity needed to support biodiversity monitoring and decision-making. In focusing on these challenges, the third project component targets systemic and institutional capacity development for generating and applying biodiversity knowledge. To this end, a biodiversity information management system will be established in Tanintharyi for potential subsequent adoption at the national level and training programs will be institutionalized to develop regional and national capacity[115]. The former will include the establishment of biodiversity assessment protocols and demonstrating their application through field surveys to benchmark the status of biodiversity at project demonstration sites[116]. These will be undertaken as training exercises with local scientists to build capacity in the region.

2. SCOPE OF REPORT

This report comprises a review of existing capacity and training opportunities for obtaining, understanding, and managing biodiversity knowledge for a range of project stakeholders in the Tanintharyi Region. This was compiled through literature review, correspondence and consultations with project stakeholders during a visit to Myanmar in March–April 2016 (Annex 2). Particular emphasis is placed on Myeik district in the Tanintharyi Region, the proposed location for many of the projects interventions. Specifically, the report

- Identifies staff and programs that already are involved or could be involved in the collection, management, and application of biodiversity information;
- Assesses existing capacity-building opportunities within MONREC, universities and technical schools;
- Highlights a range of potential capacity-building mechanisms related to these activities;
- Catalogues existing curricula pertaining to biodiversity and associated gaps; and,
- Evaluates human resources and career development opportunities related to biodiversity.

[113] Formerly the Ministry of Environmental Conservation and Forestry (MOECAF)
[114] The projects land/seascapes and PA system are depicted in Annex 1.
[115] Project Identification Form 5427: Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi.
[116] Tanintharyi PNP, Lenya & Extension PNP, Aucklan Bay, Thayawthatangyi Islands and La Ngan Islands.

3. EXISTING CAPACITY FOR GENERATING & APPLYING BIODIVERSITY INFORMATION

3.1 Government Agencies

Forest Department (MONREC)

MONREC is the national coordinating agency for environmental management in Myanmar and responsible for biodiversity conservation, protected area and wildlife management, and forest management. It is the lead national partner of the project, through its Forest Department (FD) which comprises six divisions. The Nature and Wildlife Conservation Division (NWCD) and Training and Research Development Division (TRDD) of FD have particular relevance to the project's third component. NWCD has the mandate for management of national protected areas, whereas TRDD has oversight for education and capacity building activities for FD staff, including Central Forest Department Training Centres and Myanmar Forest School. Both will also receive capacity development assistance from the GEF 5 project 'Strengthening Sustainability of Protected Area Management in Myanmar'.

NWCD has insufficient financial, human and material resources to fulfil its mandate[117]. For instance, chronic staff shortages have led to only 20 of the 39 PAs nationally currently being staffed and >30% of these 563 personnel will retire within the next decade[118]. As a consequence, NWCD lacks the capacity and resources to undertake biodiversity research, although it does participate in site-based activities led by NGOs and also monitors populations of some species. The division lacks a GIS department and/or dedicated GIS officers and hardware and generally meets its own mapping needs in house (although it can ask the RS/GIS section of the Planning & Statistics Division for assistance). It does however manage the Myanmar Clearing House Mechanism[119] although not the Myanmar Environmental Information Portal[120], which is managed by the Environmental Conservation Department of MONREC.

Within the Tanintharyi Region, Myeik District FD has 87 staff, five of whom are dedicated to the area encompassed by Tanintharyi Proposed National Park. Myeik FD lacks resources and capacity for biodiversity research and monitoring and so relies on support from NWCD, Myeik University and NGOs for most of its information needs. It also lacks hardware and human resources for systematic information management and as no formal mechanisms exist for information sharing, this is largely achieved by sharing of hard/soft materials on an ad-hoc basis. The same applies to FD in Dawei and Kawthoung Districts. Much of Myeik FD's current work concerns the establishment and maintenance of forest reserves and PAs (per the 10 year forest master plan for the region) and in-house capacity largely relates to forest inventory work. As in-house facilities for capacity development do not exist locally, staff training is currently restricted to short courses organized by central FD at Central Forest Department Training Centers. Consequently, training was identified by senior staff as being required in "all aspects of biodiversity conservation and protected area management".

Forest Research Institute (FRI)

The FRI is located in Yezin and provides technical information to the Forest Department and other stakeholders on forestry and related activities, through research activities, to increase the contribution of the forest sector to the well-being of the nation. Research efforts exclude wildlife studies and are mainly undertaken through two divisions: the Forest Development Division and Wood Utilization Sector. Research areas include sustainable forest management; plantations, NTFP and fuelwood resources development; rehabilitation, reforestation and

[117] Clarke, J.E. 1999. Biodiversity and protected areas: Myanmar. Unpublished report to the Regional Environmental Technical Assistance 5771 Poverty Reduction and Environmental Management in Remote Greater Mekong Subregion Watersheds Project (Phase I).
[118] Pers. comm. U Naing Zaw Htun, Assistant Director, NWCD, Nap Pyi Taw, March 2016.
[119] www.myanmarchm.gov.mm
[120] http://mya.gms-eoc.org/

enrichment planting; watershed management and soil conservation; genetic conservation of commercial timber species; use of GIS and remote sensing in forest management; and, community forestry assessment.

Department of Fisheries (Ministry of Livestock and Fisheries, MLF)

The Department of Fisheries (DoF) is responsible for matters related to fisheries resources, fisheries products, aquatic living organisms and aquatic endangered species. The DoF has several directorates including Capture Fisheries, Aquaculture, Research and Development and Administration. Responsibilities include: conservation and rehabilitation of fishery resources; promotion of surveys and research; compilation of fishery data and information; provision of fisheries extension services; supervision of fishery sectors and ensuring sustainability of fishery resources. DoF also oversees some conservation areas including the marine component of Thamihla Kyun Wildlife Sanctuary and two shark protected areas, crab protected areas and turtle conservation areas (though the latter are omitted from official protected area statistics for Myanmar[121]). DoF is expected to receive capacity building assistance from the GEF project 'MyCoast: Ecosystem-Based Conservation of Myanmar's Southern Coastal Zone' presently being developed by FAO.

Within the Tanintharyi Region, Myeik District DoF currently has 40 staff, most of whom are reportedly graduates (with degrees in either Zoology or Marine Science). None of the current staff belong to the Research & Development Directorate. Although Myeik DoF collects data on fish catches (via landings), vessel registration and fish exports, it does not undertake primary biodiversity research and monitoring due to resource and capacity limitations and so largely relies on collaborations with NGOs and Myeik University for its information needs. For example, the operational capacity of the department for marine work is severely constrained by the lack of a sea vessel and diving equipment. It also lacks hardware and human resources for RS/GIS and systematic information management and as no formal mechanisms exist for information sharing, this is largely achieved by sharing of hard/soft materials on an ad-hoc basis. Much the same applies to DoF in the Dawei and Kawthoung Districts. As the DoF lacks local facilities for capacity development, staff training is confined to short courses (<1 month) organized by central DoF for mostly lower to mid- level staff (ca. 4 staff / year) at the Fisheries Training Institute in Yangon. Related priorities for capacity building identified by DoF included:

- Developing capacity of staff and local communities for sustainable management of marine ecosystems; and
- Undertaking biodiversity and fisheries research (particularly stock assessment) and monitoring within the project area (land management is also needed around Myeik township where relatively high levels of marine pollution have been found in recent surveys compared to other areas).

3.2 Higher Education Institutions

Although the University of Forestry at Yezin is located outside of the project region, it is included below as it is the main educational centre for forest and protected area officers in Myanmar. Myanmar currently lacks a research institute dedicated to coastal management and/or marine protected areas and most researchers in related fields work at the Pathein, Mawlamyine and Myeik universities (which include Marine Science Departments). As the former are located outside of the project area however, the following is restricted to Myeik University.

University of Forestry at Yezin (UoF)

Governed by the Forest Department, UoF has evolved from a forestry education entity to an institute to a full university with undergraduate and postgraduate programmes on forestry and forest products. Its mission is to provide the students with academic principles and application methods in forest science and to nurture competent forestry professionals. Current faculty expertise is confined to forest ecology (silviculture) and social forestry and

[121] Pers. comm. U Tint Tun, March 2016.

constrained by rapid staff turnover, difficulty in recruiting qualified staff, and low priority and support in FD planning. Consequently lacking expertise and facilities, UoF does not undertake research to generate or apply biodiversity information. UoF has relations with universities in Germany and Japan and participates in the Mekong Wetland Network and Himalayan Universities Consortium. It will receive assistance in the form of curriculum development for protected area management and wildlife conservation from the GEF 5 project implemented by WCS.

Myeik University (MU)

Originally founded as Myeik College in 1999 and upgraded in 2004, MU currently hosts >2,500 day students and ≈5,000 distance education students[122]. Departments related to biodiversity conservation include Botany, Zoology, Geography and Marine Science. Besides the central university library (which caters to the needs of undergraduate students), each department has its own library and supports 11–19 staff, approximately half or less of whom are reported to undertake research[123]. Past and current research efforts reportedly include: Botany–medicinal plants, taxonomy, species inventory, anatomy, phytochemistry; Zoology–taxonomy, species inventory, ecology (mammals, birds, fish, invertebrates, crustaceans); Geography–land cover change; Marine Science–phytochemistry, ecology, species inventory, husbandry (various plant and animal taxa). Like other government institutions, MU experiences difficulties in developing and retaining staff expertise due to the national transfer system, but has tried to address this problem by prioritizing staff of local origin for capacity-building.

Facilities at the university include a marine science museum and the Botany, Zoology, Geography and Marine Science departments possess basic field and laboratory equipment, although these do not include a vessel or diving equipment[124]. The Marine Science department is also developing an 800 acre mangrove park near the university to facilitate research on mangrove ecology and restoration. However due to funding constraints, research efforts are typically limited to collaborative activities and those permitted by personal funds[125]. Human and hardware resources for remote sensing, geographical information systems and biodiversity data management are also lacking. MU collaborations in biodiversity research include MoU's with Worldview (Norway), Harrison Institute (UK), Fauna & Flora International (Myanmar), Prince of Songkhla University and Chulalongkorn University (Thailand) among others[126]. Although MU does not formally collaborate with government agencies (Forest Department & Department of Fisheries) in research or data sharing (with this essentially occurring on an ad-hoc basis), both have participated in thesis projects in the past.

3.3 Other Organizations

The Tanintharyi Region has historically seen little community-based environmentalism, as Myanmar's recent history has not been particularly amenable to its evolution[127]. However, recent years have seen growth in a variety of conservation activities by NGOs, many (but by no means all) of which are summarized below. All of these NGOs are either already involved or could potentially be involved in the collection, management, and application of biodiversity information in the Tanintharyi Region.

Organization	Summary
Biodiversity and Nature	Headquartered in Yangon, BANCA is a membership-based NGO whose aim is to conserve natural diversity through actions based on surveys and research, partnership, network

[122] http://www.myeikuniversity.edu.mm/?page_id=1148
[123] Souter, N.J., Furey, N.M. 2015. Feasibility of university capacity building project replication in Vietnam, Lao PDR and Myanmar. Consultancy report for Fauna & Flora International, Cambodia Programme.
[124] Equipment inventories for each department are not included due to their length, but are available on request.
[125] Pers. comm. Prof. Nang Mya Han, Head of Marine Science Department, Myeik University, March 2016.
[126] Myeik University Prospectus, 2016.
[127] BOBLME. 2015. Situation analysis of the Myeik Archipelago, BOBLME-2015-Ecology-36.

Organization	Summary
Conservation Association (BANCA)	building, environmental education and public awareness, and improvement of rural livelihoods. Within the Tanintharyi Region, BANCA has worked with FFI and Instituto Oikos among others on a variety of activities including surveys of coral reefs, coastal birds (in the Myeik Archipelago), terrestrial biodiversity (including annual surveys for Gurney's pitta), socio-economic surveys, awareness raising, community development & alternative livelihoods works and support for Lenya Proposed National Park.
Ecosystem Conservation & Community Development Initiative (ECCDI)	ECCDI was established in 2006 by senior ex-government officials with expertise in environment, ecosystem management, forestry, wildlife, agriculture, livestock and community development. While ECCDI reported it has yet to undertake activities in the Tanintharyi Region, it has nonetheless developed a proposal for a large project for a mixture of conservation works in Kyun Su Township (near Myeik Township) including mangroves, Gurney's pitta, and community forestry, health and education activities.
Economically Progressive Ecosystem Development (EcoDev)	EcoDev is a local NGO dedicated to facilitating an enabling environment for social capital development through private-public-partnerships. Ongoing works include support for sustainable livelihoods through community forestry, agroforestry and soil and water conservation; training and support for rural energy savings, income generation and emergency water supply; and networking for environmental advocacy and governance. Detailed information on present and future projects in the Tanintharyi Region were not available, although this has included activities related to RSPO and HCV, community forestry and detection and mapping of forest cover change.
Dawei Research Association (DRA)	Research and conservation group based in Dawei which works broadly on environment, social and economic and human right issues. Information regarding its past, present and future projects are not widely publicized, although DRA is currently implementing an EU funded project with FFI in Tanintharyi. Its involvement includes support for gazettement, zonation and co-management of protected areas and locally managed marine areas; sustainable livelihoods works; and development of a spatial data atlas for the region.
Fauna & Flora International (FFI)	Active in Myanmar since 2006, FFI implements a wide range of biodiversity conservation and protected area management projects at sites across the country. Activities in the Tanintharyi Region include assessments of mangrove, seagrass, coral reef, fisheries and forest ecosystems (and critical species inhabiting these) and associated threats; identification of marine and terrestrial KBAs; sectoral reviews (palm oil); socio-economic surveys; support for gazettement, zonation and co-management of protected areas and locally managed marine areas; and a variety of awareness raising, capacity building and sustainable livelihoods works.
Friends of Wildlife (FOW)	Reported activities in the Tanintharyi Region include species conservation, community development and biodiversity research initiatives, and elsewhere include human-elephant conflict sites in Rakhine Yoma Elephant Sanctuary, endemic and endangered turtles in three major river systems (Salween, Ayeyarwaddy, Chindwin), sustainable fishing in Indawgyi Lake, and community forestry and Eld's deer conservation in the central dry zone.
Instituto Oikos (Oikos)	Oikos has a long term commitment to Lampi Marine National Park where it has supported development of a four-year general management plan (2014-2018) and ecotourism plan (2015-2018). It currently undertakes activities in four areas: 1) Creation of a geo-referenced database for coral reefs, seagrass, mangrove and terrestrial forest; 2) Development of monitoring protocols for selected taxa (terrestrial mammals, coastal birds, hornbills, flying foxes, reptiles & sea turtles); 3) Training of PA staff and local communities in monitoring protocols and SMART; 4) Annual biodiversity surveys.
International Union for Conservation of	In the Tanintharyi Region, IUCN has carried out an in-depth situation analysis of the Myeik Archipelago (BOBLME 2015). It also provides small grants for projects in Dawei District and support for the Myanmar National Strategy and Action Plan [for sustainable

Organization	Summary
Nature (IUCN)	management of coastal zones) under the Mangroves for the Future (MFF) program. Its future priorities for the region include development of the MPA system (report in preparation) and introduction of a course on ICM in Myanmar (based on the ICM course delivered in recent years at the Asian Institute of Technology in Thailand).
Karen Wildlife Conservation Initiative (KWCI)	The KWCI was developed to formalize partnerships between the Karen National Union, Karen Forestry Department and NGOs and provide a framework for implementing effective conservation strategies. Current works focus on: 1) Monitoring, evaluation and assessment of wildlife through on-going surveys in priority areas; 2) Training and deployment of wildlife protection units; 3) Capacity building of local teams through training activities for field-based and administrative staff. Looking forward, KWCI plans to assist with the establishment and management of nationally recognized protected areas, enabling wildlife conservation and the sustainable exploitation of forest resources.
Mangroves and Environmental Rehabilitation-Conservation Network (MERN)	Local environmental NGO working for environmental rehabilitation and conservation activities linked to development of community livelihoods and food security. Consists of 16 local environmental NGOs with experience in forestry and environment, community development, capacity building and social mobilization, agriculture, livestock & fisheries and so forth. MERN facilitates coordinates member activities (e.g. including CEPF projects) and skills transfers (via annual meetings and member meetings) and is presently developing a FLEGT proposal for awareness and capacity works with WWF and RECOFTEC.
Marine Science Association Myanmar (MSAM)	MSAM is headquartered in Yangon and comprises alumni of marine biology and marine science courses. It collaborates with Marine Science Departments at the Mawlamyine, Pathein and Myeik Universities and concentrates on research, conservation and sustainable development of coastal areas. It co-produced the first comprehensive analysis of marine conservation issues in Myanmar with WCS (see below) in 2013[128].
Smithsonian Institution (SI)	SI is the world's largest museum and research complex and has collaborated on biological/ecological studies and in-service training for government staff in Myanmar for >20 years. In this time, it has trained >300 MONREC staff and completed 50 research projects (& 150 scientific papers), aiding the discovery of >70 species new to science and thousands of new country records. In 2015, SI projects encompassing the Tanintharyi Region included: Biodiversity survey and database development; Forest cover and land use change mapping for Myanmar; Supporting integrated seascape management in Tanintharyi; Human-elephant conflict; and, Capacity building for community conservation.
Wildlife Conservation Society (WCS)	WCS has many active projects, albeit almost entirely focused on terrestrial issues, particularly in the north and around the Ayeyarwady Region. In the Tanintharyi Region, WCS supported the development of the regional forestry plan and has also supported Tanintharyi Nature Reserve by developing the park management plan and introducing the SMART patrol system. It also co-produced the first comprehensive analysis of marine conservation issues in Myanmar with MSAM in 2013.
World Wildlife Fund (WWF)	WWF established an office in Dawei District in mid-2015, the Dawei Development Corridor in northern Tanintharyi being a target area for integration of green economy principles and development of natural capital strategies under the country program[129]. Works to date have included community forestry (in five communities, focusing on restoration of forests near roads and streams), biodiversity surveys, and support for protected areas proposed by the KNU (community forests and wildlife sanctuaries) along the proposed road from Dawei to Kanchanaburi. These have involved collaboration with

[128] Holmes et al. 2013. Marine conservation in Myanmar – the current knowledge of marine systems and recommendations for research and conservation. Yangon, WCS and MSAM.

[129] Helsingen et al. 2015. A better road to Dawei: Protecting wildlife, sustaining nature, benefiting people. WWF Myanmar.

Organization	Summary
	the Karen Wildlife Conservation Initiative and the (Thailand-based) Karen Social Action Network.

4. CAPACITY BUILDING OPPORTUNITIES FOR GENERATING & APPLYING BIODIVERSITY INFORMATION

4.1 Higher Education Institutions

Following nearly five decades of military rule, Myanmar has experienced a severe decline in its higher education (HE) sector and university locations have been decentralised in recent years to prevent student uprisings. No national centre of excellence currently exists in the conservation sciences and although biology faculties are present in universities throughout the country, none presently deliver interdisciplinary BSc or MSc degrees dedicated to biodiversity conservation or integrated coastal management, including those associated with the Tanintharyi Region (e.g. the Mawlamyine, Dawei and Myeik universities).

Reform in Myanmar's HE sector began in 2011 with the political transition to a democratic regime[130] and additional reform is anticipated following the formation of the new government (as Daw Aung San Suu Kyi has long advocated for academic freedom[131] and became chief education minister in March 2016), although the Ministry of Education (MoE) and other ministries presently continue to control many aspects of university management, including student enrollment, curricula, faculty recruitment and staff rotations[132]. As a consequence, the curricula of all degrees relevant to biodiversity conservation (e.g. zoology, botany, geography and marine science) are essentially standardized across MoE universities.

In the current university system, there is a strong focus on theory and knowledge with little or no focus on skills and competencies[133]. Field trips and practicals are included in some curricula, but inter-departmental collaborations within universities to provide interdisciplinary skills training are scant and there is also little or no culture of collaboration between MoE universities with stakeholders such as the Department of Fisheries and the Forest Department.

University of Forestry at Yezin (UoF)

Existing undergraduate and postgraduate programs offered at UoF primarily relate to forestry and forest products, although the university has proposed changing the undergraduate program to a modular system emphasizing ecosystem-based approaches which awaits approval. Recent years have seen declining interest in the sciences among Myanmar students[134] and UoF graduate numbers have dropped from 200 to 100 each year due to the lack of jobs for graduates. At present, only the BSc in Forestry (= 5 years of study) curriculum presently includes topics related to biodiversity conservation and protected area management (full details are given in Annex 3), although

[130] Po Po Thaung Win. 2015. An overview of higher education reform In Myanmar. International Conference on Burma/Myanmar Studies "Burma/Myanmar in Transition: Connectivity, Changes and Challenges". Chiang Mai University, Thailand, July 2015.

[131] Anon. 2013. Empowering higher education: A vision for Myanmar's Universities. British Council, U.K.

[132] Holiday, I. 2015. Higher education reform in Myanmar. http://tertiaryeducation.org/2013/07/reconstructing-higher-education-in-myanmar/

[133] Steins et al. 2015. Capacity building for sustainable aquaculture and fisheries in Myanmar. IMARES Report C075/15.

[134] http://www.burmanet.org/news/2015/09/28/myanmar-times-yangon-and-mandalay-universities-lower-entrance-marks-may-thinzar-naing/

these are effectively limited to a single course in the degree's fourth year. Courses and thesis modules dedicated to the development of remote sensing, GIS, biodiversity research skills and data management are also lacking.

Current faculty expertise is limited to forest ecology (silviculture) and social forestry and constrained by rapid staff turnover, difficulty in recruiting qualified staff, and low priority and support in FD planning.

However, UoF will receive assistance from the WCS-led GEF 5 project in the form of curriculum development for protected area management and wildlife conservation. This will exclude marine components, as the project area comprises terrestrial sites in the north of the country. Related subject matter awaits the outcomes of a gap analysis and needs assessment, though it is envisaged that this will include SMART enforcement patrolling and biological monitoring of habitats and species[135]. Interest was expressed by UoF in collaborating with the project on training junior faculty members in subjects regarded as having practical relevance, as follows: Biodiversity Assessment & Monitoring, Environmental Impact Assessment, Environmental Law and Integrated Land & Seascape Management.

Central Forest Department Training Centers (CFDTCs) & Myanmar Forestry School (MFS)

The Training and Research Development Division (TRDD) of the Forest Department has oversight for education and capacity building activities for Forest Department staff. These include CFDTCs near Yangon and Mandalay and MFS at Pyin Oo Lwin. The CFDTCs provide short training courses (typically 2–6 weeks) to in-service staff and local communities. Examples include bamboo products development, community forestry development, REDD+ related forest conservation, remote sensing/geographical information systems, watershed management, agroforestry, and village-owned plantation development. The MFS provides in-service training for foresters to reach ranger level. This is a nine-month course offered to long serving forestry staff to provide them with the skills needed for promotion within the Forest Department. Alongside UoF, both CFDTCs and MFS will receive assistance in curriculum development under the WCS-led GEF 5 project (see above). Pending the recommendations of an ongoing training needs assessment, this may include a certificate program in biodiversity conservation/protected area management and introduction of a teaching training program (a certificate for teachers in conservation science/protected area management).

Fisheries Training Institute (FTI)

The FTI is located in Yangon and overseen by the Department of Fisheries and employs 29 staff, six of whom are field trainers for the whole of Myanmar[136]. The FTI provides short-term training courses – generally shorter than one month – for department of fisheries officers, farmers and fishermen. Related curricula reportedly consist of introductory and conceptual topics, with little in-depth or practical material[137] and as noted previously, no curriculum devoted to fisheries management and/or integrated coastal management presently exists in Myanmar.

Myeik University (MU)

Although MU does not offer in-service training at present[138], degrees related to biodiversity conservation include BA/BSc (= 4 years of study), BA/BSc Hons (= 5 years)[139] and MA/MSc (= 3 years, including qualifying year) degrees in Zoology, Botany, Marine Science and Geography. Numbers of students graduating in 2013 with BA/BSc, BA/BSc (Hons) and MA/MSc degrees in these subjects ranged from 11–70, 2–4 and 4, respectively. Students with a BA or BSc degree must complete one year of qualifying studies to begin MA/MSc studies, whereas students with a BA/BSc (Hons) degree bypass this qualifying year to enter MA/MSc studies directly. MA/MSc degrees comprise four semesters (= 2 years) of study, whereby semesters 1–3 consist of course work and the fourth of an original

[135] Pers. comm. Rob Tizard & Madhu Rao, Wildlife Conservation Society, March-April 2016.
[136] Steins et al. 2015. Capacity building for sustainable aquaculture and fisheries in Myanmar. IMARES Report C075/15.
[137] Pers. comm. Dr Htun Thein, Research & Development Directorate, Department of Fisheries, March 2016.
[138] Pers. comm. Prof. Si Si Hla Bu, Rector, Myeik University, March 2016.
[139] Only students with sufficient grades from years 1-2 of a BSc degree can enter BSc (Hons) studies.

research thesis. The postgraduate semesters each year run from June–September and the second from December–March[140]. An MRes degree also exists which comprises one year of research, although this will reportedly discontinue in 2017[141].

All degree courses at MU are delivered bilingually (with teaching mostly in Burmese and materials in English) and all examinations and theses are undertaken in English. Full details of BA/BSc, BA/BSc Hons and MA/MSc curricula delivered at MU are given in Annexes 4–7[142]. Although undergraduate curricula for Zoology, Botany and Marine Science appear to cover the principles of biology relatively well, the bulk of courses emphasize pure topics with a small minority devoted to conservation biology, biodiversity management or other applied subjects (which typically occur only in final years). Equally little attention is given to the development of skills for biodiversity surveys and research, quantitative methods, data management, remote sensing analyses and/or geographic information systems, with the latter entirely absent from Zoology and Botany curricula. MSc curricula (which unlike undergraduate degrees include a research thesis) provide slightly greater attention to these, although conservation and protected area management topics remain poorly represented. Geography curricula naturally cover a greater variety of disciplines, including several subjects germane to biodiversity conservation (e.g. biodiversity, ethics in environmental conservation, climatology, natural resource management and conservation, statistics, remote sensing and geospatial technology), though not protected area management.

Previous assessments have revealed MU's limited capacity for delivering interdisciplinary curricula concerning biodiversity conservation[143], particularly practical aspects and thesis research. This finding was echoed in the present assessment, and priority areas identified by MU staff for capacity development in the context of the GEF 6 project included:

#	Marine Science Dept.	Geography Dept.	Botany Dept.	Zoology Depart.
1	Biodiversity Information Management	Remote Sensing & Geographical Information Systems	Remote Sensing & Geographical Information Systems	Biodiversity Information Management
2	Species & Ecosystem Services Conservation	Global Climate Change	Biodiversity Information Management	Remote Sensing & Geographical Information Systems
3	Remote Sensing & Geographical Information Systems	Integrated Land & Seascape Management	Community-based Conservation Management	Biodiversity Assessment & Monitoring

4.2 Other Capacity Development Initiatives

Alongside activities presently being undertaken by conservation NGOs (summarized in section 3.3), several additional initiatives pose opportunities for collaborations to develop conservation capacity in the Tanintharyi Region. These are summarized below.

Organization	Summary
Bay of Bengal Large Marine	A regional initiative aiming to lay the foundations for a coordinated program of action to improve the lives of the coastal populations through improved regional management of the

[140] The reverse applies to undergraduate degrees i.e. the 1st semester each year runs from December to March and the 2nd semester from June to September.
[141] Pers. comm. Prof. Si Si Hla Bu, Rector, Myeik University, March 2016.
[142] Syllabi are not included here due to their length, but are available on request.
[143] Souter, N.J., Furey, N.M. 2015. Feasibility of university capacity building project replication in Vietnam, Lao PDR and Myanmar. Consultancy report for Fauna & Flora International, Cambodia Programme.

Organization	Summary
Ecosystem Project (BOBLME)	Bay of Bengal environment and its fisheries. The initiative encompasses a large variety of works including strengthening governance through enhancing dialogue for planning and harmonization of transboundary policies, mechanisms for collaboration and information exchange; improving resource management through promotion of best management practices and marine protected areas, development of management capacity and indicators of ecosystem health; and expanding knowledge of fisheries and species ecology, large scale processes, climate change and challenges facing small-scale fishers.
Southeast Asian Fisheries Development Center (SEAFDEC)	An autonomous intergovernmental body established in 1967 to promote fisheries development in Southeast Asia. SEAFDEC aims to develop fishery potentials for 11 member countries in the region through training, research and information services. The SEAFDEC Training Department (near Bangkok) delivers a wide variety of courses and recent trainings for Myanmar DoF officials have included ecosystem approaches to fisheries management (and extension methods) and fisheries stock assessment methods (basic and advanced).
Mangroves for the Future (MFF)	A partnership-based initiative aiming to strengthen the environmental sustainability of coastal development and promote sound investments in coastal ecosystem management, as a means of enhancing resilience and supporting local livelihoods throughout the Indian Ocean Region. MFF deliver a seven-week course on Integrated Coastal Management (ICM) at the Asian Institute of Technology near Bangkok, Thailand. The course comprises three modules (Marine & Coastal Management, Principles & Tools for ICM and Coastal Project Development, Evaluation and Management), seminars and other sessions. Participants are nominated by the National Coordinating Bodies of MFF member countries (including Myanmar) and include representatives of the government sector, civil society and where relevant nominees from academic institutions, though these normally only comprise 2–3 participant per country/cohort.
Phuket Marine Biological Centre (PMBC), Thailand	The PMBC was established in 1966 under a bilateral agreement between Denmark and Thailand and is located at the southern Cape Panwa of Phuket Island. Its main objective is to carry out research on and assess the abundance of marine and coastal flora and fauna in the Andaman Sea and the Gulf of Thailand. The center hosts several workshops and trainings which allow Myanmar scientists to attend and learn new technologies applicable to effective resource management e.g. on coral reef monitoring and conservation.

5. Synthesis & Recommendations

A. The current lack of capacity and curricula for integrated land and seascape management, biodiversity conservation and protected areas management in the Tanintharyi Region clearly signals the need for development and recurrent delivery of interdisciplinary training on these subjects. As training facilities for forestry or fisheries department officers do not exist in the region, Myeik University is recommended for partnering in related capacity building works undertaken by the project. Although the university lacks a sea vessel and diving equipment, its Botany, Zoology, Geography and Marine Science departments possess basic field and laboratory equipment and due to its proximity and dedicated facilities and staff for training, the institution currently offers the best prospects for institutionalizing the projects capacity building works within the Tanintharyi Region.

B. Alongside higher education institutions, government agencies (FD & DoF) and actual project partners (SI & FFI), NGOs that are already involved or that could potentially be involved in the collection, management and application of biodiversity information in the Tanintharyi Region include BANCA, ECCDI, EcoDev, DRA, FOW, Oikos, IUCN, KWCI, MERN, MSAM, WCS and WWF (see section 3.3 for details). Among the latter, BANCA, EcoDev, KWCI, Oikos, WCS and WWF could prove especially valuable partners in the development and subsequent implementation of systematic monitoring protocols for ecosystems and species.

C. Because it will be some time before protected area (e.g. NWCD) staff are present on the ground in the Myeik and Kawthoung districts, interim targets for capacity-building activities should include LMMA committees and personnel, government forestry and fisheries staff and local communities in and around the projects proposed demonstration sites[144], especially those involved in community forestry, agro-forestry and other livelihood activities supportive to conservation. This particularly applies to local representatives and communities in areas governed by the Karen National Union.

D. To maximize accessibility to project stakeholders, the project should focus on the development and delivery of short stand-alone courses and begin the process by undertaking an in-depth gap analysis and training needs assessment for stakeholders to ensure that all relevant biodiversity conservation and information management and dissemination topics are covered (see below). To ensure complementarity of investments in training materials, this should include coordination with the GEF 5 project implemented by WCS[145] and the forthcoming MyCoast project proposed by FAO. Both the design and delivery of training should also be coordinated with other international and domestic organizations and associated opportunities (see summary tables in section 3.3 & 4.2).

E. The following is a broad list of relevant topics that should be compared with existing curricula, syllabi and other materials to identify gaps and revision needs. In each year of the project, one to two new training modules should be developed and piloted based on identified priorities. Although some modules may only require delivery at specific stages of the project (pending the outcomes of the needs assessment), a sub-package of short courses should be established at Myeik University over the lifespan of the project so that these are regularly available into the future (see below).

    - Biodiversity assessment & monitoring (ecosystems, habitats & species)
    - Integrated land & seascape management
    - Protected area management & planning
    - Species & ecosystem services conservation
    - Global climate change
    - Invasive species management
    - Remote sensing & geographical information systems
    - Biodiversity Information Management (or Bioinformatics)
    - Scientific writing and peer-review publishing
    - Environmental impact assessment
    - Environmental & protected area law
    - Wildlife trade & law enforcement (SMART enforcement patrolling)
    - Education, outreach & awareness
    - Participatory conservation management & conflict resolution
    - Social development & gender equity
    - Project cycle management (incl. monitoring & evaluation)
    - Community conservation & empowerment

F. Design and delivery of training materials should focus on the development of competence, as opposed to theory or knowledge. Competence refers to the proven ability to do a task or job, which is often defined in terms of the required skills, knowledge and attitude. For protected area and conservation area staff in

[144] Tanintharyi PNP, Lenya & Extension PNP, Aucklan Bay, Thayawthatangyi Islands and La Ngan Islands.
[145] Curriculum design by the GEF 5 project is scheduled for completion in the first quarter of 2017.

particular, these should adopt the approach advocated by the 'Competencies for Personnel of Protected Area and other Conservation Sites' register[146] which describes 290 specific competencies for protected area jobs, classified into four levels in 14 functional categories covering organizational management, applied protected area management and generic work related skills. These are intended to act as a set of building blocks that can be flexibly adapted to meet specific requirements and training and development contexts.

G. To institutionalize the projects capacity building interventions, a 'training of trainers' process for selected staff at Myeik University should be incorporated into the design process and delivery of short courses developed by the project, particularly the sub-package of courses recommended above. Above all, this should encourage the involvement of lecturers from different departments (and officials from the Forest Department &/or Department of Fisheries) in individual courses to foster a culture for collaboration and interdisciplinary approaches to training between government agencies (see below). While longer curricula such as higher degrees are not recommended for accessibility reasons at present, this is nonetheless fundamental to establishing institutional capacity for such developments in the future and consistent with the recommendations of recent conservation reviews e.g. Holmes et al. (2013)[147], MOECAF (2015)[148], BOBLME (2015)[149], Steins et al. (2015)[150] and MFF (2015)[151].

H. Other activities in the third project component offer excellent opportunities to develop capacity for generation and dissemination of biodiversity through action-based learning. For instance, the field work required to generate baseline data on species richness/distributions and establish monitoring protocols for habitats and species provide an ideal space for the project to co-develop and mentor applied research projects by university staff and students (theses). Consultations to identify associated opportunities, priorities and preferred modalities should therefore be included in the needs assessment and ultimately seek to establish a formal structure for collaboration between FD, DoF and MoE on identified research priorities. The same could also provide a mechanism for collaborations with NGOs and overseas researchers and serve to direct their efforts towards the information needs of conservation managers within the region. For instance, the proposed annual biodiversity land/sea scape forum[152] and systematic biodiversity information management system could provide effective platforms for communicating these priorities.

I. The project goal of developing a biodiversity data repository and open access web portal for the Tanintharyi Region constitutes a signal opportunity to entrench capacity for systematic information management and sharing at Myeik University[153]. Conservation activities being undertaken by other organizations in the region also offer a range of important learning opportunities (see summary tables in sections 3.3 & 4.2). For instance, workshops and study tours concerning Tanintharyi Nature Reserve, the La Ngan and Thayawthatangyi Island LMMAs and Lampi National Park would provide signal opportunities to highlight good (and bad) practices and disseminate lessons learnt in protected area planning and management.

[146] Appleton, M.R. 2015. Competences for personnel of protected areas and other conservation sites. A global register and user guide. IUCN, Gland, Switzerland. Note: This standard is proposed as it supersedes Appleton et al. (2003) and as WCS are using it for the GEF 5 project needs-assessment (Madhu Rao pers. comm.).

[147] Holmes et al. 2013. Marine conservation in Myanmar – current knowledge of marine systems and recommendations for research and conservation. Yangon, WCS and MSAM.

[148] MOECAF. 2015. National biodiversity strategy and action plan (2015–2020). Forest Department, Nay Pyi Taw.

[149] BOBLME. 2015. Situation analysis of the Myeik Archipelago, BOBLME-2015-Ecology-36.

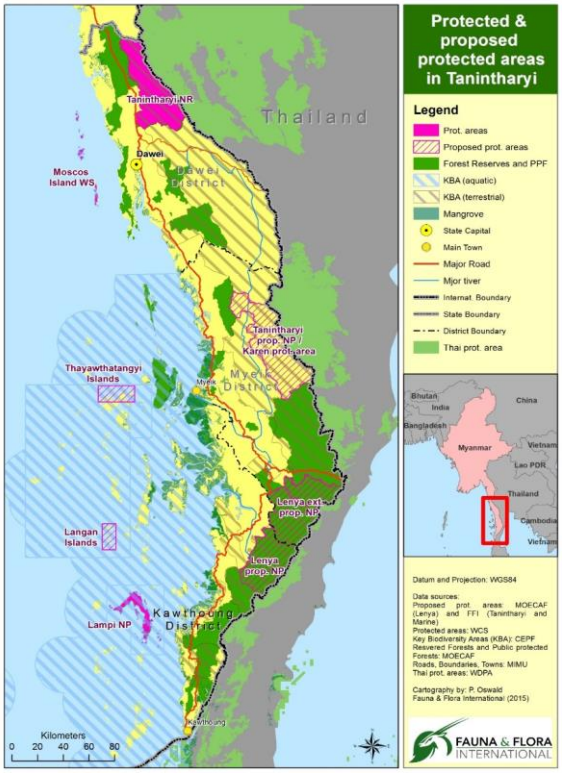
[150] Steins et al. 2015. Capacity building for sustainable aquaculture and fisheries in Myanmar. IMARES Report C075/15.

[151] MFF. 2015. Myanmar national strategy and action plan. Mangroves for the Future, Nay Pyi Taw.

[152] This proposal is to support one of the regional universities in facilitating and convening an annual biodiversity land/sea scape forum to provide opportunities for knowledge/experience sharing, networking and for students and young scientists from universities/research institutions in the region to engage in research.

[153] See PPG Biodiversity knowledge tools and platform assessment report, April 2016.

Annex 1 Project land/seascapes and PA system in the Tanintharyi Region



Annex 2 Schedule of consultations with project stakeholders in March–April 2016

Day	Date	Location/ Travel	Activity / Item
1	27 March (Sunday)	Arrival in Yangon	▪ PM: Internal GEF-PPG meeting (UNDP & Consultants) to discuss mission plans and logistics
2	28 March (Monday)	Fly to Nap Pyi Taw Fly to Yangon	▪ AM: Meeting with IUCN & Forest Department Watershed Division ▪ AM: Meeting with Forest Department NWCD and Forest Research Institute[154] ▪ PM: Meeting with Department of Fisheries ▪ PM: Meeting with University of Forest Yezin
3	29 March (Tuesday)	Fly to Myeik	▪ AM: Meeting with Forest Department, Myeik District ▪ AM: Meeting with Department of Fisheries, Myeik District ▪ PM: Meeting with Myeik University (Rector & Marine Science, Geography, Botany & Zoology Department representatives)
4	30 March (Wednesday)	Fly to Yangon	▪ PM: Meeting with WCS
5	31 March (Thursday)	Yangon	▪ AM: Meeting with OIKOS ▪ AM: Meeting with FFI ▪ PM: Meeting with local NGOs at MERN office (MERN, FOW, BANCA, ECCDI, MSAM)[155] ▪ PM: Meeting with Head of Marine Science, Myeik University
6	01 April (Friday)	Yangon	▪ AM: Meeting with WWF ▪ AM: Brief (logistics) meeting at UNDP ▪ PM: Preparation of meeting notes
7	02 April (Saturday)	Depart Yangon	

[154] Representatives of the FD Training & Research Development Division were unfortunately unavailable for the meeting.
[155] Representatives for EcoDev (Economically Progressive Ecosystem Development) were unfortunately unavailable for the meeting.

Annex 3 Curriculum for BSc Forestry, University of Forestry at Yezin

BSc Forestry (Five years) (1 semester = 16 weeks)

No.	Name of Module	Hours / week		
		Theory	Practical	Tutorial
	BSc Forestry, Year 1, Semester 1			
1	Myanmar	3	-	1
2	English	3	-	1
3	Botany	2	2	-
4	Zoology	2	2	-
5	Mathematics	3	-	1
6	Physics	2	2	-
7	Chemistry	2	2	-
	BSc Forestry, Year 1, Semester 2			
1	Myanmar	2	-	1
2	English	2	-	1
3	Botany	3	2	-
4	Zoology	3	2	-
5	Mathematics	2	-	1
6	Physics	3	2	-
7	Chemistry	3	2	-
	BSc Forestry, Year 2, Semester 1			
1	English	3	-	1
2	Geology	3	1	-
3	Mycology	2	2	-
4	Dendrology	2	2	-
5	Tree Physiology	2	2	-
6	Forest Entomology	2	2	-
7	Statistics (Elementary)	4		-
	BSc Forestry, Year 2, Semester 2			
1	English	3	-	1
2	Statistics (Forest Biometry)	4	-	-
3	Forest Pathology	2	2	-
4	Forest Soil	2	2	-
5	Bio-climatology	3	1	-
6	Forest Survey	2	2	-
	BSc Forestry, Year 3, Semester 1			
1	English	2	-	2
2	Forest Protection	4	-	-
3	Forest Ecology	5	-	-
4	Forest Hydrology	5	-	-
5	Foundation of Silviculture	5	-	-
6	Wood Technology I	5	-	-
	BSc Forestry, Year 3, Semester 2			
1	English	2	-	2
2	Plantation Silviculture & Nursery Practices	4	-	-

No.	Name of Module	Hours / week		
		Theory	Practical	Tutorial
3	Forest Mensuration	4	-	-
4	Forest Utilization (NWFPs)	4	-	-
5	Wood Technology II (Timber Physics & Mechanics)	4	-	-
6	Forest Engineering	4	-	-
7	Forest Inventory, RS & GIS	4	-	-
	BSc Forestry, Year 4, Semester 1			
1	English	2	-	2
2	Silvicultural Systems	5	-	-
3	Forest Management I (Introductory)	5	-	-
4	Timber Harvesting	4	-	-
5	Utilization II (Wood drying & Preservation)	5	-	-
6	Milling & Marketing	5	-	-
	BSc Forestry, Year 4, Semester 2			
1	English	2	-	2
2	Forest Management I (Timber Management)	4	-	-
3	Pulp & Paper, & Panel Products	4	-	-
4	Protected Area System Management & Wildlife Management	4	-	-
5	Environmental Management	4	-	-
6	Tree Improvement & Genetics	4	-	-
7	Watershed Management	4	-	-
	BSc Forestry, Final (Study) Year, Semester 1			
1	English	2	-	2
2	Tropical Silviculture I	4	-	-
3	Forest Management II (Planning)	5	-	-
4	Forest Economics (Microeconomics)	5	-	-
5	Forest Policy, Law and Administration	5	-	-
6	Forestry Extensions & Environmental Education	5	-	-
	BSc Forestry, Final (Study) Year, Semester 2			
1	English	2	-	2
2	Tropical Silviculture II	4	-	-
3	Social Forestry (+ Agroforestry)	4	-	-
4	Forest Economics (Macroeconomics)	4	-	-
5	Research Management in Forestry	4	-	-
6	Ecotourism Practices	4	-	-
7	Term Paper	4	-	-

Annex 4 Curricula for BSc, BSc (Hons)* & MSc in Zoology at Myeik University

* Only students with sufficient year 1-2 grades in the BSc degree may undertake BSc (Hons) studies.

BSc Zoology (Four years)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BSc Zoology, Year 1, Semester 1 (3 elective courses required)				
R – 1001	Foundation Course	3	2	2
Eng – 1001	English	3	2	2
Zool – 1101	Organization & Variety of Life	4	3	2
Elective: Bot - 1001	Botany	3	2	2
Elective: Chem - 1001	Chemistry	3	2	2
Elective: AM - 1001	Aspects of Myanmar	3	2	2
BSc Zoology, Year 1, Semester 2 (3 elective courses required)				
r-1002	Foundation Course	3	2	2
Eng -1002	English	3	2	2
Zool - 1102	Life processes and Homeostasis	4	3	2
Elective: Bot – 1002	Botany	3	2	2
Elective: Chem – 1002	Chemistry	3	2	2
Elective: AM - 1002	Aspects of Myanmar	3	2	2
BSc Zoology, Year 2, Semester 1 (2 elective courses required)				
Eng- 2001	English	3	2	2
Zool - 2101	Protochordates and Cyclostomes	4	3	2
Zool - 2102	Basic Ichthyology	4	3	2
Zool - 2103	Basic Herpetology	4	3	2
Elective: Zool – 2104	Science of Taxonomy	3	2	2
Elective: Bot-2001/ Chem - 2001	Botany / Chemistry	3	2	2
BSc Zoology, Year 2, Semester 2 (2 elective courses required)				
Eng - 2002	English	3	2	2
Zool - 2105	Basic Ornithology	4	3	2
Zool - 2106	Basic Mammalogy	4	3	2
Zool - 2107	Comparative Anatomy & Nomenclature	4	3	2
Elective: Zool - 2108	Biosphere & Microtechniques	3	2	2
Elective: Bot-2002 / Chem – 2002	Botany / Chemistry	3	2	2
BSc Zoology, Year 3, Semester 1 (1 elective course required)				
Eng- 3001	English	3	2	2
Zool – 3101	Protista and Lower Invertebrates	4	3	2
Zool – 3102	Acoelomata	4	3	2
Zool- 3103	Coelomata	4	3	2
Zool - 3104	Miscellaneous Phyla and Mollusks	4	3	2
Elective: Zool – 3109	Cell Biology	3	2	2
Elective: Bot – 3001	Botany	3	2	2
Elective: Chem-3001	Chemistry	3	2	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BSc Zoology, Year 3, Semester 2 (1 elective course required)				
Eng - 3002	English	3	2	2
Zool - 3105	Arthropoda	4	3	2
Zool - 3106	Echinodermata	4	3	2
Zool - 3107	Invertebrate Physiology	4	3	2
Zool - 3108	Invertebrate Aquaculture	4	3	2
Elective: Zool – 3110	Biology of Diseases	3	2	2
Elective: Bot – 3002	Botany	3	2	2
Elective: Chem – 3002	Chemistry	3	2	2
BSc Zoology, Year 4, Semester 1 (1 elective course required)				
Eng – 4001	English	3	2	2
Zool – 4101	Ecology and Zoogeography	4	3	2
Zool – 4102	Entomology	4	3	2
Zool – 4103	Parasitology	4	3	2
Zool – 4104	Applied Herpetology	4	3	2
Elective: Zool – 4105	Research Methodology and Biostatistics	3	2	2
Elective: Zool – 4106	Environmental Toxicology	3	2	2
BSc Zoology, Year 4, Semester 2 (1 elective course required)				
Eng – 4002	English	3	2	2
Zool – 4107	Applied Ichthyology	4	3	2
Zool – 4108	Ornithology	4	3	2
Zool – 4109	Mammalogy	4	3	2
Zool – 4110	Genetics	4	3	2
Elective: Zool – 4211	Organic Evolution	3	2	2
Elective: Zool – 4212	Paleontology	3	2	2

BSc (Hons) Zoology (Three years)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BSc (Hons) Zoology, Year 1, Semester 1 (1 elective course required)				
Eng - 3001	English	3	2	2
Zool - 3201	Protista and Lower Invertebrates	4	3	2
Zool - 3202	Acoelomata	4	3	2
Zool- 3203	Coelomata	4	3	2
Zool - 3204	Miscellaneous Phyla and Mollusks	4	3	2
Elective: Zool – 3209	Cell Biology	3	2	2
Elective: Bot – 3001	Botany	3	2	2
Elective: Chem - 3001	Chemistry	3	2	2
BSc (Hons) Zoology, Year 1, Semester 2 (1 elective course required)				
Eng- 3002	English	3	2	2
Zool - 3205	Arthropoda	4	3	2
Zool - 3206	Echinodermata	4	3	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
Zool - 3207	Invertebrate Physiology	4	3	2
Zool - 3208	Invertebrate Aquaculture	4	3	2
Elective: Zool - 3210	Biology of Diseases	3	2	2
Elective: Bot – 3002	Botany	3	2	2
Elective: Chem – 3002	Chemistry	3	2	2
BSc (Hons) Zoology, Year 2, Semester 1 (1 elective course required)				
Eng - 4001	English	3	2	2
Zool - 4201	Ecology and Zoogeography	4	3	2
Zool - 4202	Entomology	4	3	2
Zool - 4203	Parasitology	4	3	2
Zool - 4204	Applied Herpetology	4	3	2
Elective: Zool – 4205	Research Methodology and Biostatistics	3	2	2
Elective: Zool – 4206	Environmental Toxicology	3	2	2
BSc (Hons) Zoology, Year 2, Semester 2 (1 elective course required)				
Eng - 4002	English	3	2	2
Zool – 4207	Applied Ichthyology	4	3	2
Zool – 4208	Ornithology	4	3	2
Zool – 4209	Mammalogy	4	3	2
Zool – 4210	Genetics	4	3	2
Elective: Zool – 4211	Organic Evolution	3	2	2
Elective: Zool –4212	Paleontology	3	2	2
BSc (Hons) Zoology, Year 3, Semester 1				
Zool -5201	Embryology	4	3	2
Zool -5202	Endocrinology	4	3	2
Zool -5203	Biodiversity	4	3	2
Zool -5204	Virology and Bacteriology	4	3	2
Zool -5205	Research Methodology	4	3	2
Zool -5206	Linkage and Chromosome mapping	4	3	2
BSc (Hons) Zoology, Year 3, Semester 2				
Zool – 5207	Physiology	4	3	2
Zool – 5208	Immunology	4	3	2
Zool – 5209	Evolution	4	3	2
Zool – 5210	Paleontology	4	3	2
Zool – 5211	Biotechnology	4	3	2
Zool – 5212	Biometry	4	3	2

MSc Zoology (Three years, including initial qualifying year)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
MSc Zoology, Qualifying Year, Semester 1				
Zool - 5201	Embryology	4	3	2
Zool - 5202	Endocrinology	4	3	2
Zool - 5203	Biodiversity	4	3	2
Zool - 5204	Virology and Bacteriology	4	3	2
Zool - 5205	Research Methodology	4	3	2
Zool - 5206	Linkage and Chromosome mapping	4	3	2
MSc Zoology, Qualifying Year, Semester 2				
Zool – 5207	Physiology	4	3	2
Zool – 5208	Immunology	4	3	2
Zool – 5209	Evolution	4	3	2
Zool – 5210	Paleontology	4	3	2
Zool – 5211	Biotechnology	4	3	2
Zool – 5212	Biometry	4	3	2
MSc Zoology, Year 1, Semester 1				
Zool - 611	Principles of Systematic Zoology	4	4	2
Zool - 612	Zoogeography	4	4	2
Zool - 613	Genetics	4	4	2
Zool - 614	Biometrics	4	4	2
MSc Zoology, Year 1, Semester 2				
Zool - 621	Animal Physiology and Endocrinology	4	4	2
Zool - 622	Ecology	4	4	2
Zool - 623	Evolution and Animal Behaviour	4	4	2
Zool - 624	Microbiology	4	4	2
MSc Zoology, Year 2, Semester 1				
Zool - 631	Embryology	4	4	2
Zool - 632	Environmental Studies and Conservation and Management	4	4	2
Zool - 633	Post Graduate Study in the Biology Sciences	4	4	2
Zool - 634	Project Planning and Implementation and Farm Economics	4	4	2
MSc Zoology, Year 2, Semester 2				
1.	Literature Survey Practical performance Paper presentation (1)	8	-	-
2.	Viva	8	-	-

Annex 5 Curricula for BSc, BSc (Hons)* & MSc in Botany at Myeik University

* Only students with sufficient year 1-2 grades in the BSc degree may undertake BSc (Hons) studies.

BSc Botany (Four years)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BSc Botany, Year 1, Semester 1 (2 elective courses required)				
R – 1002	Foundation Course	3	2	2
Eng - 1002	English	3	2	2
Bot - 1102	Basic Concepts of Applied Botany	4	3	2
Elective: Zool - 1002	Life Processes and Fossils	3	2	2
Elective: Chem - 1002	General Chemistry II	3	2	2
Elective: Geol - 1003	General Geology II	3	2	2
Elective: Geog - 1002	Elements of Climatology	3	2	2
Elective: Bot - 1001	Varieties of Plants and their Relatives	3	2	2
AM - 1002	Aspects of Myanmar	3	2	2
BSc Botany, Year 1, Semester 2 (2 elective courses required)				
R – 1002	Foundation Course	3	2	2
Eng - 1002	English	3	2	2
Bot - 1102	Basic Concepts of Applied Botany	4	3	2
Elective: Zool - 1002	Life Processes and Fossils	3	2	2
Elective: Chem - 1002	General Chemistry II	3	2	2
Elective: Geol - 1003	General Geology II	3	2	2
Elective: Geog - 1002	Elements of Climatology	3	2	2
Elective: Bot - 1002	Importance of plants	3	2	2
AM - 1002	Aspects of Myanmar	3	2	2
BSc Botany, Year 2, Semester 1 (2 elective courses required)				
Eng - 2001	English	3	2	2
Bot - 2101	Survey of Plant Kingdom I	4	3	2
Bot - 2102	Angiosperms I	4	3	2
Bot - 2103	Genetics I	4	3	2
Elective: Bot – 2104	Ecology	3	2	2
Elective: Bot – 2105	Flowering Plants and Civilization I	3	2	2
Elective: Zool – 2001	Invertebrate Zoology	3	2	2
Elective: Chem - 2002	Organic Chemistry I	3	2	2
Elective: Bot – 2001	Biodiversity I	3	2	2
BSc Botany, Year 2, Semester 2 (2 elective courses required)				
Eng – 2002	English	3	2	2
Bot – 2106	Survey of Plant Kingdom II	4	3	2
Bot – 2107	Angiosperms II	4	3	2
Bot – 2108	Genetics II	4	3	2
Elective: Bot – 2109	Horticulture	3	2	2
Elective: Bot – 2110	Flowering Plants and Civilization II	3	2	2
Elective: Zool – 2002	Vertebrate Zoology	3	2	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
Elective: Chem - 2005	Organic Chemistry II	3	2	2
Elective: Bot – 2002	Biodiversity II	3	2	2
BSc Botany, Year 3, Semester 1 (1 elective course required)				
Eng – 3001	English	3	2	2
Bot - 3101	Medicinal Plants	4	3	2
Bot - 3102	Plant Cytology and Anatomy	4	3	2
Bot - 3103	Plant Physiology I	4	3	2
Bot - 3104	Environmental Biology	4	3	2
Elective: Bot – 3105	Floristics and Herbarium Techniques	3	2	2
Elective: Bot – 3106	Weed Science	3	2	2
Elective: Zool – 3001	Insects of Agricultural Importance	3	2	2
Elective: Chem - 3001	Organic Chemistry III	3	2	2
Elective: Bot – 3001	Plant Pathology I	3	2	2
BSc Botany, Year 3, Semester 2 (1 elective course required)				
Eng – 3002	English	3	2	2
Bot - 3107	Cell Biology	4	3	2
Bot - 3108	Cytogenetics	4	3	2
Bot - 3109	Plant Physiology II	4	3	2
Bot - 3110	Biodiversity and Conservation	4	3	2
Elective: Bot – 3111	Plant Tissue Culture	3	2	2
Elective: Bot – 3112	Plant Pathology	3	2	2
Elective: Zool – 3002	Insect Toxicology	3	2	2
Elective: Chem - 3002	Organic Chemistry IV	3	2	2
Elective: Bot – 3002	Plant Pathology II	3	2	2
BSc Botany, Year 4, Semester 1 (1 elective course required)				
Eng – 4001	English	3	2	2
Bot – 4101	Plant Systematics	4	3	2
Bot – 4102	Pharmacognosy	4	3	2
Bot – 4103	Microbiology	4	3	2
Bot – 4104	Biochemistry	4	3	2
Elective: Bot - 4105	Research Methodology	3	2	2
Elective: Bot - 4106	Mineral Nutrition of Plant	3	2	2
BSc Botany, Year 4, Semester 2 (1 elective course required)				
Eng – 4002	English	3	2	2
Bot – 4107	Applied Ecology	4	3	2
Bot – 4108	Plant Biotechnology	4	3	2
Bot – 4109	Applied Microbiology	4	3	2
Bot – 4110	Biostatistics	4	3	2
Elective: Bot - 4111	Molecular Biology	3	2	2
Elective: Bot - 4112	Introduction to Evolution	3	2	2

BSc (Hons) Botany (Three years)

Module No.	Name of Module	Credit	Hours / week

		Points	Lecture	Practical/ Tutorial
BSc (Hons) Botany, Year 1, Semester 1 (1 elective course required)				
Eng – 3001	English	3	2	2
Bot - 3201	Medicinal Plants	4	3	2
Bot - 3202	Plant Cytology and Anatomy	4	3	2
Bot - 3203	Plant Physiology I	4	3	2
Bot - 3204	Environmental Biology	4	3	2
Elective: Bot - 3205	Floristics and Herbarium Techniques	3	2	2
Elective: Bot - 3206	Weed Science	3	2	2
Elective: Zool - 3001	Insects of Agricultural Importance	3	2	2
Elective: Chem - 3001	Organic Chemistry III	3	2	2
BSc (Hons) Botany, Year 1, Semester 2 (1 elective course required)				
Eng – 3002	English	3	2	2
Bot - 3207	Cell Biology	4	3	2
Bot - 3208	Cytogenetics	4	3	2
Bot - 3209	Plant Physiology II	4	3	2
Bot - 3210	Biodiversity and Conservation	4	3	2
Elective: Bot - 3211	Plant Tissue Culture	3	2	2
Elective: Bot - 3212	Plant Pathology	3	2	2
Elective: Zool - 3002	Insect Toxicology	3	2	2
Elective: Chem - 3002	Organic Chemistry IV	3	2	2
Elective: Bot - 3002	Plant Pathology II	3	2	2
BSc (Hons) Botany, Year 2, Semester 1 (1 elective course required)				
Eng – 4001	English	3	2	2
Bot – 4201	Plant Systematics	4	3	2
Bot – 4202	Pharmacognosy	4	3	2
Bot – 4203	Microbiology	4	3	2
Bot – 4204	Biochemistry	4	3	2
Elective: Bot - 4205	Research Methodology	3	2	2
Elective: Bot - 4206	Mineral Nutrition of Plant	3	2	2
BSc (Hons) Botany, Year 2, Semester 2 (1 elective course required)				
Eng – 4002	English	3	2	2
Bot – 4207	Applied Ecology	4	3	2
Bot – 4208	Plant Biotechnology	4	3	2
Bot – 4209	Applied Microbiology	4	3	2
Bot – 4210	Biostatistics	4	3	2
Elective: Bot - 4211	Molecular Biology	3	2	2
Elective: Bot - 4212	Introduction to Evolution	3	2	2
BSc (Hons) Botany, Year 3, Semester 1				
Bot – 5201	Industrial Microbiology	4	3	2
Bot – 5202	Advanced Plant Physiology I	4	3	2
Bot – 5203	Advanced Pharmacognosy	4	3	2
Bot – 5204	Molecular Genetics	4	3	2
Bot – 5205	Plant Geography	4	3	2
Bot – 5206	Evolution	4	3	2
BSc (Hons) Botany, Year 3, Semester 2				
Bot – 5207	Microbial Biotechnology	4	3	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
Bot – 5208	Advanced Plant Physiology II	4	3	2
Bot – 5209	Industrial and Economic Plants	4	3	2
Bot – 5210	Enzymology	4	3	2
Bot – 5211	Ethnobotany	4	3	2
Bot – 5212	Environmental Education and Ethics	4	3	2

MSc Botany (Three years, including initial qualifying year)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Seminar
MSc Botany, Qualifying Year, Semester 1				
Bot - 5201	Industrial Microbiology	4	3	2
Bot - 5202	Advanced Plant Physiology I	4	3	2
Bot - 5203	Advanced Pharmacognosy	4	3	2
Bot - 5204	Molecular Genetics	4	3	2
Bot - 5205	Plant Geography	4	3	2
Bot - 5206	Evolution	4	3	2
MSc Botany, Qualifying Year, Semester 2				
Bot - 5207	Microbial Biotechnology	4	3	2
Bot - 5208	Advanced Plant Physiology II	4	3	2
Bot - 5209	Industrial and Economic Plants	4	3	2
Bot - 5210	Enzymology	4	3	2
Bot - 5211	Ethnobotany	4	3	2
Bot - 5212	Environmental Education and Ethics	4	3	2
MSc Botany, Year 1, Semester 1				
Bot - 611	Evolutionary Survey of Plant Kingdom	4	4	2
Bot - 612	Principle of Taxonomy	4	4	2
Bot - 613	Pharmacognosy	4	4	2
Bot - 614	Environmental Science	4	4	2
MSc Botany, Year 1, Semester 2				
Bot – 621	Embryology and Morphogenesis	4	4	2
Bot – 622	Plant Geography	4	4	2
Bot – 623	Microbiology	4	4	2
Bot – 624	Research Methods and Fundamental Technique	4	4	2
MSc Botany, Year 2, Semester 1				
Bot - 631	Biodiversity and Conservation	4	4	2
Bot - 632	Plant Biochemistry and Physiology	4	4	2
Bot - 633	Molecular Biology and Biotechnology	4	4	2
Bot - 634	Molecular Genetics and Evolution	4	4	2
MSc Botany, Year 2, Semester 2				
Bot - 641	Seminar and Research Progress Report	8	-	-
Bot - 642	Thesis and Viva Voce	8	-	-

Annex 6 Curricula for BSc, BSc (Hons)* & MSc in Marine Science at Myeik University

* Only students with sufficient year 1-2 grades in the BSc degree may undertake BSc (Hons) studies.

BSc Marine Science (Four years)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BSc Marine Science, Year 1, Semester 1 (1 elective & 1 specialized course required)				
R – 1001	Foundation Course	3	2	2
Eng - 1001	English	3	2	2
MS - 1101	Marine Ecosystems	4	3	2
AM - 1001	Aspects of Myanmar	3	2	2
Elective: Phys - 1001	Physics	3	2	2
Elective: Chem - 1001	Chemistry	3	2	2
Elective: Math - 1001	Mathematics	3	2	2
Special: MS - 1102	Biological Oceanography I	4	3	2
Special: Geol - 1001	General Geology I	4	3	2
BSc Marine Science, Year 1, Semester 2 (1 elective & 1 specialized course required)				
R - 1002	Foundation Course	3	2	2
Eng - 1002	English	3	2	2
MS - 1103	General Oceanography	4	3	2
AM – 1002	Aspects of Myanmar	3	2	2
Elective: Phys - 1002	Physics	3	2	2
Elective: Chem - 1002	Chemistry	3	2	2
Elective: Math - 1002	Mathematics	3	2	2
Special: MS - 1104	Biological Oceanography II	4	3	2
Special: Geol - 1003	General Geology II	4	3	2
BSc Marine Science, Year 2, Semester 1 (2 electives & 1 specialized course required)				
Eng - 2001	English	3	2	2
MS - 2101	Biometrics	4	3	2
MS - 2102	Navigation and Boatworks	4	3	2
Elective: MS - 2104	Marine Invertebrates	3	2	2
Elective: MS - 2105	Marine Algae	3	2	2
Elective: MS - 2106	Cell Biology	3	2	2
Elective: Geol - 2004	Marine Igneous Activity	3	2	2
Elective: Geol - 2005	Ocean Basin Tectonics	3	2	2
Elective: Geol - 2006	General Petrology I	3	2	2
Special: MS - 2103	Biological Oceanography III	4	3	2
Special: Geol - 2003	General Sedimentology I	4	3	2
BSc Marine Science, Year 2, Semester 2 (2 electives & 1 specialized course required)				
Eng 2002	English	3	2	2
MS 2107	Physical Oceanography	4	3	2
MS 2108	Chemical Oceanography	4	3	2
Elective: MS - 2110	Marine Vertebrates	3	2	2
Elective: MS - 2111	Genetics	3	2	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
Elective: MS - 2112	Remote Sensing and GIS	3	2	2
Elective: Geol - 2008	Outline of Field Geology	3	2	2
Elective: Geol - 2009	Delta and Deltaic Sedimentation	3	2	2
Elective: Geol - 2010	General Petrology II	3	2	2
Special: MS - 2109	Biological Oceanography IV	4	3	2
Special: Geol - 2007	General Sedimentology II	4	3	2
BSc Marine Science, Year 3, Semester 1 (1 core, 1 elective & 1 specialized course required)				
Eng – 3001	English	3	2	2
MS – 3101	Resources Management	4	3	2
MS – 3102	Oceanography of the Indian Ocean	4	3	2
Core: MS – 3103	Hatchery Practices in Mariculture	4	3	2
Core: Geol - 3003	Marine Mineral Resources	4	3	2
Elective: MS - 3105	Physiology of Marine Organisms	3	2	2
Elective: MS - 3106	Marine Phycology	3	2	2
Elective: Geol - 3005	Marine Environment Geology I	3	2	2
Elective: Geol - 3006	Photogeology	3	2	2
Special: MS - 3104	Biological Oceanography V	4	3	2
Special: Geol - 3004	Paleontology	4	3	2
BSc Marine Science, Year 3, Semester 2 (1 core, 1 elective & 1 specialized course required)				
Eng - 3002	English	3	2	2
MS - 3107	Integrated Coastal Zone Management	4	3	2
MS - 3108	Coral Reefs	4	3	2
Core: MS – 3109	Grow-out Methodologies in Mariculture	4	3	2
Core: Geol - 3007	Applied Sedimentation	4	3	2
Elective: MS - 3111	Live Food Cultures for Aquaculture	3	2	2
Elective: MS - 3112	Post-Harvest Technology of Marine Fishery	3	2	2
Elective: Geol - 3009	Marine Environmental Geology II	3	2	2
Elective: Geol - 3010	Marine Exploration Geology	3	2	2
Special: MS - 3110	Biological Oceanography VI	4	3	2
Special: Geol - 3008	Field Training Course (15 days)	4	3	2
BSc Marine Science, Year 4, Semester 1 (2 core & 1 specialized course required)				
Eng – 4001	English	3	2	2
MS – 4101	Fishery Sciences	4	3	2
MS – 4102	Large Marine Ecosystems	4	3	2
Core: MS – 4103	Ecology of Shallow Waters and Intertidal Communities	4	3	2
Core: MS – 4104	Systematics and Ecology of Seagrasses	4	3	2
Core: Geol – 4001	Brief Geology of Myanmar I	4	3	2
Core: Geol – 4002	Principles of Stratigraphy	4	3	2
Special: MS – 4105	Biological Oceanography VII	4	3	2
Special: Geol – 4003	Outline of Marine Geology I	4	3	2
BSc Marine Science, Year 4, Semester 2 (2 core & 1 specialized course required)				
Eng - 4002	English	3	2	2
MS - 4106	Data Analysis and Statistics	4	3	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
MS - 4107	Population Dynamics and Stock Assessment in Fisheries	4	3	2
Core: MS – 4108	Systematics and Ecology of Mangroves	4	3	2
Core: MS – 4109	Ecology of Seaweed Communities	4	3	2
Core: Geol - 4004	Brief Geology of Myanmar II	4	3	2
Core: Geol - 4005	Coastal Geomorphology	4	3	2
Special: MS - 4110	Biological Oceanography VIII	4	3	2
Special: Geol - 4006	Outline of Marine Geology II	4	3	2

BSc (Hons) Marine Science (Three years)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BSc (Hons) Marine Science, Year 1, Semester 1 (1 core, 1 elective & 1 specialized course required)				
Eng - 3001	English	3	2	2
MS - 3201	Resources Management	4	3	2
MS - 3202	Oceanography of the Indian Ocean	4	3	2
Core: MS – 3203	Hatchery Practices in Mariculture	4	3	2
Core: Geol - 3003	Marine Mineral Resources	4	3	2
Elective: MS - 3205	Physiology of Marine Organisms	3	2	2
Elective: MS - 3206	Marine Phycology	3	2	2
Elective: Geol - 3005	Marine Environment Geology I	3	2	2
Elective: Geol - 3006	Photogeology	3	2	2
Special: MS - 3204	Biological Oceanography V	4	3	2
Special: Geol - 3004	Paleontology	4	3	2
BSc (Hons) Marine Science, Year 1, Semester 2 (1 core, 1 elective & 1 specialized course required)				
Eng - 3002	English	3	2	2
MS - 3207	Integrated Coastal Zone Management	4	3	2
MS - 3208	Coral Reefs	4	3	2
Core: MS – 3109	Grow-out Methodologies in Mariculture	4	3	2
Core: Geol - 3007	Applied Sedimentation	4	3	2
Elective: MS - 3211	Live Food Cultures for Aquaculture	3	2	2
Elective: MS - 3212	Post-Harvest Technology of Marine Fishery	3	2	2
Elective: Geol - 3009	Marine Environmental Geology II	3	2	2
Elective: Geol - 3010	Marine Exploration Geology	3	2	2
Special: MS - 3210	Biological Oceanography VI	4	3	2
Special: Geol - 3008	Field Training Course (15 days)	4	3	2
BSc (Hons) Marine Science, Year 2, Semester 1 (2 core & 1 specialized course required)				
Eng - 4001	English	3	2	2
MS - 4201	Fishery Sciences	4	3	2
MS - 4202	Large Marine Ecosystems	4	3	2
Core: MS – 4203	Ecology of Shallow Waters and Intertidal Communities	4	3	2
Core: MS – 4204	Systematics and Ecology of Seagrasses	4	3	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
Core: Geol – 4001	Brief Geology of Myanmar I	4	3	2
Core: Geol – 4002	Principles of Stratigraphy	4	3	2
Special: MS – 4205	Biological Oceanography VII	4	3	2
Special: Geol – 4003	Outline of Marine Geology I	4	3	2
BSc (Hons) Marine Science, Year 2, Semester 2 (2 core & 1 specialized course required)				
Eng - 4002	English	3	2	2
MS - 4206	Data Analysis and Statistics	4	3	2
MS - 4207	Population Dynamics and Stock Assesment in Fisheries	4	3	2
Core: MS – 4208	Systematics and Ecology of Mangroves	4	3	2
Core: MS – 4209	Ecology of Seaweed Communities	4	3	2
Core: Geol - 4004	Brief Geology of Myanmar II	4	3	2
Core: Geol - 4005	Coastal Geomorphology	4	3	2
Special: MS - 4210	Biological Oceanography VIII	4	3	2
Special: Geol - 4006	Outline of Marine Geology II	4	3	2
BSc (Hons) Marine Science, Year 3, Semester 1 (3 core & 1 specialized course required)				
MS - 5201	Advanced Marine Ecology	4	3	2
MS - 5202	Impacts of Climate Change on Marine Ecosystems	4	3	2
Core: MS - 5203	Estuarine Ecosystems	4	3	2
Core: MS - 5204	Phycology (Systematics)	4	3	2
Core: MS – 5205	Planktonology	4	3	2
Core: Geol - 5001	Global Tectonics	4	3	2
Core: Geol - 5002	Seafloor Geology	4	3	2
Core: Geol - 5003	Elementary Micropaleontology	4	3	2
Special: MS – 5206	Biological Oceanography IX	4	3	2
Special: Geol - 5004	Petrology	4	3	2
BSc (Hons) Marine Science, Year 3, Semester 2 (3 core & 1 specialized course required)				
MS - 5207	Marine Environments and Biodiversity	4	3	2
MS - 5208	The Health of the Oceans	4	3	2
Core: MS – 5209	Quality Assurance of Marine Products	4	3	2
Core: MS – 5210	Animal Physiology	4	3	2
Core: MS – 5211	Phycology (Ecology)	4	3	2
Core: Geol – 5005	Elementary Quaternary Geology	4	3	2
Core: Geol – 5006	Geology of Andaman Sea and Bay of Bengal	4	3	2
Core: Geol – 5007	Outline of Applied Geology	4	3	2
Special: MS – 5212	Biological Oceanography X	4	3	2
Special: Geol – 5008	Regional Stratigraphy of Neighbouring Countries	4	3	2

MSc Marine Science (Three years, including initial qualifying year)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
MSc Marine Science, Qualifying Year, Semester 1 (3 core & 1 specialized course required)				
MS - 5201	Advanced Marine Ecology	4	3	2
MS - 5202	Impacts of Climate Change on Marine Ecosystems	4	3	2
Core: MS - 5203	Estuarine Ecosystems	4	3	2
Core: MS - 5204	Phycology (Systematics)	4	3	2
Core: MS - 5205	Planktonology	4	3	2
Core: Geol - 5001	Global Tectonics	4	3	2
Core: Geol - 5002	Seafloor Geology	4	3	2
Core: Geol - 5003	Elementary Micropaleontology	4	3	2
Special: MS - 5206	Biological Oceanography IX	4	3	2
Special: Geol - 5004	Petrology	4	3	2
MSc Marine Science, Qualifying Year, Semester 2 (3 core & 1 specialized course required)				
MS 5207	Marine Environments and Biodiversity	4	3	2
MS 5208	The Health of the Oceans	4	3	2
Core: MS – 5209	Quality Assurance of Marine Products	4	3	2
Core: MS – 5210	Animal Physiology	4	3	2
Core: MS – 5211	Phycology (Ecology)	4	3	2
Core: Geol – 5005	Elementary Quaternary Geology	4	3	2
Core: Geol – 5006	Geology of Andaman Sea and Bay of Bengal	4	3	2
Core: Geol – 5007	Outline of Applied Geology	4	3	2
Special: MS – 5212	Biological Oceanography X	4	3	2
Special: Geol – 5008	Regional Stratigraphy of Neighbouring Countries	4	3	2
MSc Marine Science, Year 1, Semester 1				
MS – 611	Productivity of the Indian Ocean	4	4	3
MS – 612	Oceanography of the Marginal Seas	4	4	3
MS – 613	Deep-Sea Biotic Communities	4	4	3
MS – 614	Phycology (Systematics)	4	4	3
MSc Marine Science, Year 1, Semester 2				
MS – 621	Marine Ecosystems	4	4	3
MS – 622	Quantitative Ecology	4	4	3
MS – 623	Phycology (Ecology)	4	4	3
MS – 624	Estuaries	4	4	3
MSc Marine Science, Year 2, Semester 1				
MS – 631	Marine Bioactive Substances	4	4	3
MS – 632	Evolutionary Biology & Marine Biogeography	4	4	3
MS – 633	Biology of Large Marine Mammals	4	4	3
MS – 634	Coral reefs	4	4	3
MSc Marine Science, Year 2, Semester 2				
1.	Seminar and Research Progress Report	8	-	-
2.	Thesis and Viva Voce	8	-	-

Annex 7 Curricula for BA, BA (Hons)* & MA in Geography at Myeik University

***** Only students with sufficient year 1-2 grades in the BA degree may undertake BA (Hons) studies.

BA Geography (Four years) (Elective courses unrelated to biodiversity conservation are not included)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BA Geography, Year 1, Semester 1 (1 elective course required)				
R – 1001	Foundation Course	3	2	2
Eng – 1001	English	3	2	2
Geog – 1101	Physical Geography	4	3	2
Geog – 1102	Mapwork and Basic Techniques I	4	3	2
AM – 1001	Aspects of Myanmar	3	2	2
Elective: Geog - 1001	Elements of Physical Geography	3	2	2
Elective: Geol - 1001	General Geology I	3	2	2
Elective: Bot - 1001	Varieties of Plants and their Relatives	3	2	2
Elective: Zoo - 1001	Organizations and Life Forms	3	2	2
BA Geography, Year 1, Semester 2 (1 elective course required)				
R – 1002	Foundation Course	3	2	2
Eng - 1002	English	3	2	2
Geog - 1103	Climatology	4	3	2
Geog - 1104	Mapwork and Basic Techniques II	4	3	2
AM - 1001	Aspects of Myanmar	3	2	2
Elective: Geol – 1003	General Geology II	3	2	2
Elective: Bot – 1002	Importance of Plants	3	2	2
Elective: Zoo - 1002	Life Processes and Fossils	3	2	2
Elective: Geog - 1002	Elements of Climatology	3	2	2
BA Geography, Year 2, Semester 1 (2 elective courses required)				
Eng - 2001	English	3	2	2
Geog - 2101	Integrated Human Geography	4	3	2
Geog - 2102	Geography of Developing Countries	4	3	2
Geog - 2103	Surveying & Map Projections	4	3	2
Elective: Geog - 2104	Fundamentals of Remote Sensing	3	2	2
Elective: Phil - 2002	Ethics of Environmental Conservation I	3	2	2
Elective: Geol - 2001	Outline Geology of Myanmar I	3	2	2
Elective: Bot - 2001	Biodiversity I	3	2	2
Elective: Zoo - 2001	Invertebrate Zoology	3	2	2
Elective: Geog - 2001	Environmental Geography I	3	2	2
Elective: Geog - 2003	Introduction to Geospatial Technology in Scientific Studies I	3	2	2
Elective: Geog - 2009	Human Geography I	3	2	2
BA Geography, Year 2, Semester 2 (2 elective courses required)				
Eng - 2002	English	3	2	2
Geog - 2105	Environmental Geography	4	3	2
Geog - 2106	Geography of Developed Countries	4	3	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
Geog - 2107	Cartography and Topographic Map Reading	4	3	2
Elective: Geog - 2108	Fundamentals of Geographic Information Systems	3	2	2
Elective: Phil - 2007	Ethics of Environmental Conservation II	3	2	2
Elective: Geol - 2002	Outline Geology of Myanmar II	3	2	2
Elective: Bot - 2002	Biodiversity II	3	2	2
Elective: Zoo - 2002	Vertebrate Zoology	3	2	2
Elective: Chem - 2006	Water Chemistry	3	2	2
Elective: Geog - 2002	Environmental Geography II	3	2	2
Elective: Geog - 2004	Introduction to Geospatial Technology in Scientific Studies II	3	2	2
Elective: Geog - 2010	Human Geography II	3	2	2
BA Geography, Year 3, Semester 1 (1 elective course required)				
Eng - 3001	English	3	2	2
Geog - 3101	Soils Geography	4	3	2
Geog - 3102	Geography of Settlement	4	3	2
Geog - 3103	Economic Geography I	4	3	2
Geog - 3104	Descriptive Statistics in Geography	4	3	2
Elective: Geog - 3106	Rural Geography	3	2	2
Elective: Geog - 3001	Elements of Political geography I	3	2	2
BA Geography, Year 3, Semester 2 (1 elective course required)				
Eng - 3002	English	3	2	2
Geog - 3107	Biogeography	4	3	2
Geog - 3108	Urban Geography	4	3	2
Geog - 3109	Economic Geography II	4	3	2
Geog - 3110	Inferential Statistics in Geography	4	3	2
Elective: Geog 3111	Cultural Geography	3	2	2
Elective: Geog - 3002	Elements of Political geography II	3	2	2
BA Geography, Year 4, Semester 1				
Eng - 4001	English	3	2	2
Geog - 4101	Geomorphology I	4	3	2
Geog - 4102	Political Geography I	4	3	2
Geog - 4103	Geography of Myanmar I	4	3	2
Geog - 4104	Agricultural Geography	4	3	2
Geog - 4105	Application of Geospatial Technology in Geographical Analysis	4	3	2
BA Geography, Year 4, Semester 2				
Eng - 4002	English	3	2	2
Geog - 4106	Geomorphology II	4	3	2
Geog - 4107	Political Geography II	4	3	2
Geog - 4108	Geography of Myanmar II	4	3	2
Geog - 4109	Manufacturing Geography	4	3	2
Geog - 4110	Research Methodology in Geography and Field Training	4	3	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
BA (Hons) Geography, Year 1, Semester 1 (1 elective course required)				
Eng - 3001	English	3	2	2
Geog - 3201	Soils Geography	4	3	2
Geog - 3202	Geography of Settlement	4	3	2
Geog - 3203	Economic Geography I	4	3	2
Geog - 3204	Descriptive Statistics in Geography	4	3	2
Elective: Geog - 3206	Rural Geography	3	2	2
Elective: Geog - 3001	Elements of Political geography I	3	2	2
BA (Hons) Geography, Year 1, Semester 2 (1 elective course required)				
Eng - 3002	English	3	2	2
Geog - 3207	Biogeography	4	3	2
Geog - 3208	Urban Geography	4	3	2
Geog - 3209	Economic Geography II	4	3	2
Geog - 3210	Inferential Statistics in Geography	4	3	2
Elective: Geog 3211	Cultural Geography	3	2	2
Elective: Geog - 3002	Elements of Political geography II	3	2	2
BA (Hons) Geography, Year 2, Semester 1				
Eng - 4001	English	3	2	2
Geog - 4201	Geomorphology I	4	3	2
Geog - 4202	Political Geography I	4	3	2
Geog - 4203	Geography of Myanmar I	4	3	2
Geog - 4204	Agricultural Geography	4	3	2
Geog - 4205	Application of Geospatial Technology in Geographical Analysis	4	3	2
BA (Hons) Geography, Year 2, Semester 2				
Eng – 4002	English	3	2	2
Geog – 4206	Geomorphology II	4	3	2
Geog – 4207	Political Geography II	4	3	2
Geog – 4208	Geography of Myanmar II	4	3	2
Geog – 4209	Manufacturing Geography	4	3	2
Geog - 4210	Research Methodology in Geography and Field Training	4	3	2
BA (Hons) Geography, Year 3, Semester 1				
Geog - 5201	The Nature and Philosophy of Geography	4	3	2
Geog - 5202	Oceanography	4	3	2
Geog - 5203	Population Geography	4	3	2
Geog - 5204	Natural Resource Management and Conservation	4	3	2
Geog - 5205	Geospatial Technology: Remote Sensing	4	3	2
Geog - 5206	Natural Hazards and Problems	4	3	2
BA (Hons) Geography, Year 3, Semester 2				
Geog - 5207	Advanced Climatology	4	3	2
Geog - 5208	Hydrology	4	3	2
Geog - 5209	Transportation Geography	4	3	2
Geog - 5210	Spatial Analysis	4	3	2

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
Geog - 5211	Geospatial Technology: Geographic Information Systems	4	3	2
Geog - 5212	Geography of Tourism	4	3	2

MA Geography (Three years, including initial qualifying year)

Module No.	Name of Module	Credit Points	Hours / week	
			Lecture	Practical/ Tutorial
MA Geography, Qualifying Year, Semester 1				
Geog - 5201	The Nature and Philosophy of Geography	4	3	2
Geog - 5202	Oceanography	4	3	2
Geog - 5203	Population Geography	4	3	2
Geog - 5204	Natural Resource Management and Conservation	4	3	2
Geog - 5205	Geospatial Technology: Remote Sensing	4	3	2
Geog - 5206	Natural Hazards and Problems	4	3	2
MA Geography, Qualifying Year, Semester 2				
Geog - 5207	Advanced Climatology	4	3	2
Geog - 5208	Hydrology	4	3	2
Geog - 5209	Transportation Geography	4	3	2
Geog - 5210	Spatial Analysis	4	3	2
Geog - 5211	Geospatial Technology: Geographic Information Systems	4	3	2
Geog - 5212	Geography of Tourism	4	3	2
MA Geography, Year 1, Semester 1				
Geog - 611	Development of Geographic Thought	4	4	2
Geog - 612	Geomorphology and Hydrology	4	4	2
Geog - 613	Human Geography	4	4	2
Geog - 614	Political Geography	4	4	2
MA Geography, Year 1, Semester 2				
Geog – 621	Climatology	4	4	2
Geog - 622	Soils and Biogeography	4	4	2
Geog - 623	Economic Geography	4	4	2
Geog - 624	????	4	4	2
MA Geography, Year 2, Semester 1				
Geog - 631	Geography of Land Utilization	4	4	2
Geog - 632	Environmental Studies and Geography of Resources	4	4	2
Geog - 633	Research Techniques in Geography	4	4	2
Geog - 634	Regional Analysis	4	4	2
MA Geography, Year 2, Semester 2				
1.	Seminar	8	-	-
2.	Thesis / Viva	8	-	-

Annex 18:

Detailed maps of the project landscapes (source: FFI)

-See separated file-

Annex 19:

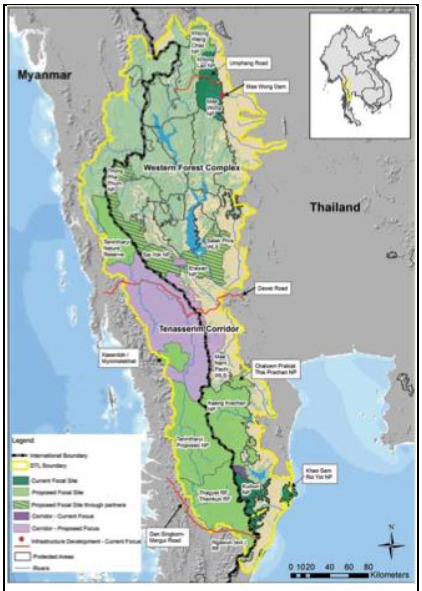
Dawna Tenasserim Landscape and Peace Parks

Transboundary Dawna Tenasserim Landscape and Peace Parks

WWF's advocacy for conserving the Dawna Tenasserim Landscape (see Partnerships section above) is a transboundary initiative that is defined by the Dawna and Tenasserim mountain ranges of Myanmar and Thailand, respectively, and embraces one of the largest PAs networks (30,539 km^2) in Southeast Asia. This landscape comprises almost 50,000 km^2 of wilderness and supports over 150 species of mammals and nearly 570 bird species, including some 200 of the estimated 250 tigers remaining in the Greater Mekong Region and fewer than 1,600 elephants[156].

The Myanmar portion of this Landscape receives heavy rainfall and supports some of the largest areas of lowland evergreen forest remaining in the Indo-Burma biodiversity hotspot. The Thai side is dryer and covered by a mosaic of evergreen and deciduous forests. The protected area network includes the contiguous Western Forest Complex that is transborder with the Tanintharyi Nature Reserve in the north and the Kaeng Krachan Forest Complex in the south that is transborder with part of the R2R Ngawun Landscape.

Ancient human civilizations have risen and fallen in this landscape, and the area is home to diverse ethnic groups who have thrived there for centuries. Recent history has witnessed much internal ethnic conflict on the Myanmar side and cross-border wildlife and other trafficking. A ceasefire agreement was signed between the KNU and former military government in 2012, since when negotiations have been ongoing to resolve areas of conflict. Among the significant issues is the resettlement of Karen people wishing to return to this Region, mostly from across the border in Thailand. KNU is understandably apprehensive about the implications of establishing protected areas in 'Karen' areas, a case in point being the proposed Tanintharyi National Park, which was included in the PIF. This has been substituted with the Ngawun, which includes the proposed Lenya National Park Extension and several forest reserves, as a gesture of reassurance.



Dawna Tenasserim Transboundary Landscape straddles the Myanmar/Thailand border

The key point is that the landscape approach to conserving biodiversity and ecosystem offers more flexibility to design an appropriate regime for managing land (and marine) resources in sustainable ways that safeguard KBAs and HCV sites than more conventional approaches. Thus, the vision of a transboundary landscape with Thailand, within which core protected areas are buffered by surround areas of sustainably managed parts of the landscape is a particularly helpful model to envision over the longer term as the project is rolled out.

As trust builds between parties previously in conflict in Myanmar, management capacity develops and integrated approaches to land and seascape management area realised, so transboundary cooperation can be explored with Thailand to take develop the vision of a Dawna Tenasserim Landscape or something more appropriately aligned with the context at that time. There are also other potential opportunities to consider alongside this vision, for example the establishment of a 'Peace Park', an initiative that originated in Southern Africa in the early 1990s (www.peaceparks.org).

Peace parks are also known as transfrontier conservation areas (TFCAs), which are defined as "the area or component of a large ecological region that straddles the boundaries of two or more countries, encompassing one or more protected areas as well as multiple resource use areas" (Southern African Development Community (SADC) Protocol on Wildlife Conservation and Law Enforcement, 1999). In essence, TFCAs extend far beyond designated protected areas, and can incorporate such innovative

[156] WWF, 2014. WWF-Greater Mekong: Dawna Tenasserim Landscape. Leaflet.

approaches as biosphere reserves and a wide range of community-based natural resource management programmes (World Bank, 1996). The Protocol commits the SADC Member States to promote the conservation of shared wildlife resources through the establishment of transfrontier conservation areas. There are current 10 peace parks and a further eight in the making.

The initiative was championed by President Mandela, a founding patron of the Peace Parks Foundation:

> *"I know of no political movement, no philosophy, no ideology, which does not agree with the peace parks concept as we see it going into fruition today. It is a concept that can be embraced by all. In a world beset by conflicts and division, peace is one of the cornerstones of the future. Peace parks are a building block in this process, not only in our region, but potentially in the entire world."*

Annex 20:
Roles of Project Stakeholders

Roles of project stakeholders, and organizations and initiatives providing opportunities for collaboration and synergy

Table 1: Engagement of Stakeholders in Project Implementation by Output

Outcome/ Output	Stakeholders	Key Responsibilities
OUTCOME 1: Land and seascapes rich in biodiversity in Tanintharyi are connected and their planning and management are integrated.		
Output 1.1: Inter-sectoral coordination and joint land/seascape planning mechanisms established in regional governance structure to integrate management of ecosystem services and biodiversity, using the High Conservation Value (HCV) approach.	~~RTACG~~RACG, UNDP, FFI	Coordination and facilitation of the process, and mobilization of inter-sectoral and sectoral participation and inputs.
	GAD, FD, DoF, FFI, UNDP, various sectoral agencies, landscape and issue based WGs	Participation in the policy and planning process and institutional capacity assessment, and timely delivery of sectoral inputs.
Output 1.2: Sector-specific standards, safeguards and incentives to protect Key Biodiversity Areas (KBAs), HCV Forests and High Carbon Stock Forests (HCSFs) developed and operational.	UNDP, FFI, FD, DoF, related sector agencies (plantations, agriculture, tourism, mining, fisheries, etc)	Coordination of the development of the sectoral standards, and subsequent operationalization and monitoring of their use
Output 1.3: Integrated land and marine resource-use plans developed and implemented for Myeik and Kawthoung districts, involving community-based natural resource management (CBNRM) and sustainable land and sea management measures, including enforcement.	~~RTACG~~RACG, GAD, District Governments, FFI	Oversight, coordination and facilitation of the process
	District Governments, FFI, FD, DoF, other sectoral agencies	Technical inputs to the process, and implementation of the plans and tools
	FFI, FD, DoF, Township Governments, CBOs, LNGOs, village administrations	Participatory land use planning
Output 1.4: Tanintharyi PA system expanded through proclamation of new sites that increase its representativeness of HCV biodiversity and cultural diversity, management capacity strengthened and financial viability addressed.	~~RTACG~~RACG, FD, DoF, FFI	Oversight, coordination and facilitation of the process, and mobilization of participation and inputs from relevant agencies
	FFI, FD, DoF, Tourism Dept	Technical support and guidance
	FFI, FD, DoF	Field-based inputs to the process, and implementation of the planning and monitoring systems and processes.
	FFI, FD, DoF, District Governments,	Mobilization of participation of local governments

Outcome/ Output	Stakeholders	Key Responsibilities
	Township Governments	
	FFI, FD, DoF, Township Governments, CBOs, LNGOs, village administrations	Local inputs to the process, including consultation process with local communities and village administrations
OUTCOME 2: Strengthened management and threat reduction in target proposed PAs, smallholder zones and corridors		
Output 2.1: Management and financing plans for target proposed PAs developed and operational with full stakeholder participation.	FFI, FD, DoF	Oversight, coordination and facilitation of the process, and quality assurance of the conservation management plans.
	FFI, FD, DoF	Implementation of field surveys and studies, local stakeholder consultations, documentation and analysis, and preparation of the conservation management plans.
	FFI, FD, DoF	Training support for field surveys and conservation management planning.
	FFI, FD, DoF	Mobilization of participation of local stakeholders during field surveys and conservation management planning process.
Output 2.2: PA site operations strengthened to address existing threats to biodiversity.	FFI, FD, DoF	Oversight, coordination and facilitation of the process, and mobilization of resources for implementation of the conservation management plans, and their monitoring.
	FFI, FD, DoF	Implementation of the conservation management plans and reporting on progress, and establishment of basic infrastructure.
	FFI, FD, DoF	Support for raising public awareness on BC system among the local stakeholders.
Output 2.3: Capacity of communities developed within KBAs, HCV habitats, smallholder zones and corridors for integrated and sustainable management of land/seascapes, including community-based natural resource management.	FFI, FD, DoF, Township Govts, UNDP	Oversight, coordination and facilitation of the process
	FFI, FD, FoD, Township Govts, Village administrations, CBOs, LNGOs	Mobilization of participation of local communities and other local stakeholders for CBNRM and community-based conservation
	UNDP, FFI	Administration of small grants to support village, CBO and LNGO inputs
OUTCOME 3: Emplacement of the National Biodiversity Survey framework and knowledge management for Integrated Land and Seascape Management: Prototype operational in Tanintharyi		
Output 3.1: National Biodiversity Survey framework designed, piloted and institutionalized within Tanintharyi Regional Government	SI, RTAGD	Oversight, coordination, and facilitation of NBS development and institutionalization in Tanintharyi govt
	SI, FD, DoF	Capacity development and technical support for NBS development
Output 3.2: Strengthened capacities of regional	SI, MU,	Oversight, coordination, and facilitation of capacity development and knowledge resource development

Outcome/ Output	Stakeholders	Key Responsibilities
universities, research institutions and government agencies (FD and DOF) to survey and monitor biodiversity; and to store, manage and disseminate such data, information and knowledge.	SI, MU, wide range of organizations managing biodiversity information	Development of biodiversity information sharing protocols, mechanisms and agreements
	SI, MU, FFI, FD, DoF, etc	Implementation of field surveys and monitoring of biodiversity in target areas
Output 3.3 Development and institutionalization of a modular biodiversity conservation and monitoring training programme in Tanintharyi Region.	SI, FD, DoF	Oversight and coordination to identify professional competency standards for biodiversity conservation agencies
	SI, MU, FD, DoF, etc	Develop and deliver training modules for biodiversity competency skills
	SI, MU, UNDP/PMU, all project stakeholders	Organize and convene first two project Stakeholder Forum Meetings
	All project stakeholders	Sharing of information and reporting on respective project outputs and activities during SF Meetings.
OUTCOME 4: Enhanced knowledge management, monitoring and evaluation support biodiversity conservation in Tanintharyi		
Output 4.1: Project results and lessons learned are made available to all project stakeholders	UNDP, PMU	Oversight, coordination, and facilitation of knowledge resource development; production and dissemination of project-based knowledge resources
	UNDP/PMU, SI, MU	Organize and convene final project Stakeholder Forum Meeting / project completion workshop
	All project stakeholders	Sharing of information/ monitoring and reporting on their respective project outputs and activities during SF Meetings.
Output 4.2: Project monitoring and evaluation system in place and used to inform project management decision-making	UNDP, PB, PMU	Implementation of the project M&E system, ensuring all M&E requirements are met as per standards and time-frame set for the project.
	All RPs for implementation	Sharing of information/ monitoring and reporting on their respective project outputs and activities.

Table 2. Mandates and roles of stakeholders in the project

Stakeholders	Mandate and relevant roles in the project
Ministry of Natural Resources and Environmental Conservation	Responsible for biodiversity conservation, protected area and wildlife management, as well as forest management. It is the lead national partner of the project, through its Forest Department, at national level and at local levels through its subsidiary agencies. It will be the lead ministry for project implementation.
Department of Fisheries	Under the Ministry of Livestock, Fisheries and Rural Development, the Department is responsible for regulating both marine and freshwater fisheries to achieve sustainable development of the sector. It is s responsible for not only fishery resource management but also fish diversity conservation in both fresh water and marine environments, thus a key stakeholder for marine protected areas planning and management.
Tanintharyi Regional Government	In the long-term decentralization process, State and Region Governments will play important roles in development planning, land use planning and resource management planning in their respective States and Regions. Therefore, the project preparation process will be conducted in full consultation with the Tanintharyi Regional Government and its relevant departments, as well as district and

	township authorities, thus increasing awareness of the needs and benefits of green growth and sound biodiversity and ecosystem management and its integration in development and sector planning.
United Nations Development Programme (UNDP)	UNDP is the GEF Agency for this project and will lead the project implementation activities. UNDP has been providing development assistance in Myanmar since the 1950s. It has a large country programme in the field of climate change, environment, energy, disaster risk reduction, democratic governance, and sustainable and inclusive community development.
Green Economy Green Growth Myanmar (GEGG) Association	GEGG Association is a non-profit organisation based in Myanmar and is an implementing partner for this project. It will play a catalytic role in project implementation, acting as a liaison between and among government agencies and other stakeholders, and facilitating inter-ministerial institutional support. In addition, GEGG Association is working towards establishing a natural resource stewardship trust fund for Myanmar.
Smithsonian Institution (SI)	SI is an implementing partner for this project and will have an active role in project implementation by providing technical expertise and inputs in the field of biodiversity information generation and management. Founded in 1846, US based quasi-government organisation SI is the world's largest museum and research complex consisting of 19 museums and galleries, the National Zoological Park and 9 research institutions. Smithsonian scientists have 20-years of experience studying the biodiversity and ecology of Myanmar, and the organization has a long-term partnership with the MOECAF. It will provide capacity building support in generating biodiversity information and application tools and act as a co-financier of the project.
Fauna and Flora International (FFI)	FFI, through its Myanmar office, is an implementing partner for this project, providing technical expertise based on its work in Myanmar, in particularly in Kachin and Chin states, and more recently in Tanintharyi region. Founded over a century ago, the UK-based FFI has been working closely with MONREC, supporting biodiversity management, protected area and forest management. It is expected to provide technical support for protected area planning/management and integrated land/ seascape management, as well as act as a co-financier through the on-going and future projects in Tanintharyi financed by EU and other donors.
Ministries responsible for economic industries	Other ministries will be consulted and involved during project implementation, including the Ministries of National Planning and Economic Development, Finance, Agriculture, Science and Technology, Tourism and Hotels, Construction, Mining, Industry. The Navy and coast guard are also important stakeholders for fisheries enforcement.
Local Authorities	District government agencies in Tanintharyi were consulted during the project preparation, in particular in the target protected area landscape and seascape. Township governments and village committees are also key partners for developing biodiversity-mainstreamed land use planning, supporting co-management and livelihood activities. Karen National Union (KNU) will also be a key stakeholder represented on the Project Board and especially for project activities within the areas under KNU control.
Academic Institutions	Myeik University will be a key partner for the project's work on capacity development for biological survey and information management, working with the Smithsonian Institution. Other academic institutions such as the Forest Research Institute and Dawei University are also potential collaborators for project capacity building and information sharing activities.
Local communities	Most important target group to achieve sustainable natural resource use at the grassroots level given their dependence on forest and marine resources. Women and men in local communities are key users and beneficiaries of forest and marine biodiversity and active participants in community forestry, LMMA and livelihood development initiatives, and key stakeholders in land use planning and protected area gazettement decision-making. They are the affected parties of human-wildlife conflict in some places, and play a major role in local habitat conservation, control of poaching, and natural resource management. Community groups have been widely consulted during the project preparation phase. In the Tanintharyi Forest Corridor, the majority of the people is indigenous Karen, with less than 10 percent Burman populations. In the areas of the Thayawthatangyi and Langann island group in the Myeik Archipelago, main ethnicities are Karen and Moken indigenous people and Burman. The Moken are also known as sea nomads who are traditionally seafaring people who travelled great distances in small boats to access a range of marine resources. They have been living in the Myeik Archipelago since at least 18th Century. In the past 20 years, they have

	become more settled with most living at least part of the year in permanent villages. The vast majority of people primarily live on fishing, with a smaller percentage of people living on small scale agriculture and other livelihoods. Target communities will be fully engaged during the project preparation, with thorough socioeconomic assessment and community involvement strategy development. A full environmental and social screening has been conducted during the PPG phase and local level beneficiaries of the project defined. The preparation activities related to community stakeholders have taken account of the recent political and land tenure issues in the country, including impacts of the National Land Use Policy finalization and implementation, customary and statutory land tenure systems, resettlement of returning refugees and increasing land disputes and land grabbing incidents.
International NGOs	In addition to FFI, international NGOs namely the Wildlife Conservation Society (WCS), World Wildlife Fund (WWF) and OIKOS are important stakeholders. WCS has been working with the MOECAF since 1993 in the northern tiger landscape corridor as well as in Tanintharyi, in particular supporting the management of Tanintharyi Nature Reserve. WWF has recently established an office in Yangon and has designed a programme to promote a green economy that sustains natural capital under its Greater Mekong Regional Strategic Plan. Tanintharyi's Dawei development corridor is a target area under the country programme. OIKOS has been working in the Lampi Marine Park, providing technical support to improve PA management and local community livelihoods. These international NGOs are potential collaborators and co-financiers of the project, and experiences will be shared through the Tanintharyi Land and Seascape Forum.
Local NGOs and CBOs	Myanmar NGOs and CBOs based in Tanintharyi will support project implementation through the Tanintharyi Land and Seascape Forum. These include Dawei Research Association, Biodiversity and Nature Conservation Association (BANCA), Dawei Development Association, Myanmar Marine Science Association (MMSA), and the Mangroves and Environmental Rehabilitation-Conservation Network (MERN). They are also potential implementers of site level activities that focus on community-based activities and participation through small grant schemes.
Inter-Governmental Organisation	IUCN supports the Forest Department in strategic planning and NBSAP update. It also supports the MERN through providing a small grant. In Tanintharyi, IUCN is carrying out an in-depth situation analysis of the Myeik Archipelago. It also supports projects in Tanintharyi as part of the Mangroves For the Future (MFF) Programme.
Industry Association	Industry associations will be important stakeholders to the project and will be widely consulted for their possible participation in the project activities and financial contributions. Target associations include the Myanmar Fisheries Association, Oil Palm Business Association, Rubber Business Association, and Mining Business Association.
Private businesses	Comprising the oil palm, rubber companies and natural resource extraction sector (oil, gas, mining, timber, fisheries), industrial investors, hydropower, tourism companies etc. active or interested in Tanintharyi Region. The private sector is likely to have the largest single impact on the biodiversity values of Tanintharyi Region, but experience suggests workable compromises can direct private sector financial and logistical resources to assist conservation. The private sector is likely to have the largest single impact on the biodiversity values of Tanintharyi Region. Workable compromises can direct private sector financial and logistical resources to assist conservation.
UN Food and Agriculture Organization	FAO were the GEF implementing agency for the Bay of Bengal Large Marine Ecosystem project which was recently completed, with a Phase 2 under consideration. It is also the IA for the proposed GEF 6 project MyCoast: Ecosystem Based Conservation of Myanmar's Southern Coastal Zone, which offers great scope for synergy with the present project.
Asian Development Bank	ADB coordinates Greater Mekong Sub-region Forests and Biodiversity Program (GMS FBP) which is part of the GMS Core Environmental Programme. One of the 7 priority transboundary landscapes of the GMS FBP is the Tenasserim Mountain Transboundary Biodiversity Landscape, which covers parts of Tanintharyi. ADB will be a potential collaborator in implementation of the project.

Table 3. Organizations and initiatives providing opportunities for collaboration and synergy

Organisation / Initiative	Description
Tanintharyi Tiger Conservation Landscape Project	**Tanintharyi Tiger Conservation Landscape Project** is a new initiative implemented by the Forest Department, MoNREC, with FFI support over a three-year period (2016-2018). It is part of the Integrated Tiger Habitat Conservation Project (ITCHP) funded by the German Development Bank (KfW) and managed globally by IUCN. In Myanmar, the project will focus on tiger and prey monitoring, community patrolling, improved law enforcement, village forest management, ecotourism pilots, and improved cooperation with Thailand. The project aims to secure the Tanintharyi – Lenya Range Corridor for the tiger to recover and increase in numbers, which geographically complements the proposed R2R project because the area matches the R2R Lenya and Ngawun landscapes. This initiative will link directly with the project through FFI as a Responsible Party involved in Components 1 and 2, providing cofinancing for related FFI-led activities.
Tanintharyi Nature Reserve, Dawei District	**Tanintharyi Nature Reserve** is currently the only designated terrestrial PA in the Region. Its conservation planning and management is being supported by Wildlife Conservation Society (WCS), who have worked with MoNREC since 1993. SMART patrolling has been introduced and community livelihoods are being enhanced. WCS has also supported Dawei District Forest Department prepare its 10-year forest management plan. The involvement of WCS in the project's regional Stakeholder Forum will provide opportunity for sharing of experiences and lessons learned, following up on consultations during the PPG phase.
Lampi Marine National Park, Kawthaung District,	**Lampi Marine National Park** is one of only two marine PAs in the Region and Myanmar's only Marine National Park, is in the process of being developed for ecotourism with support from Instituto Oikos. The island communities and local authorities are together developing tourism activities in the framework of a shared management plan for poverty reduction and environmental conservation. The involvement of Oikos in the project's regional Stakeholder Forum will provide opportunity for sharing of experiences and lessons learned, following up on consultations during the PPG phase. The NP should also be represented on the Seascape Working Group.
FAO/GEF MyCoast: Ecosystem Based Conservation of Myanmar's Southern Coastal Zone	**MyCoast** is an emerging GEF6 project at project identification stage that is being developed by FAO in partnership with MoNREC and MALI. It is focused on the Tanintharyi Region, specifically the Myeik Archipelago (34,000 km^2 and 800 islands) with the results of project interventions being scaled up throughout Myanmar's entire coastal zone. Proposed outputs are a coastal zone strategy for Myanmar's southern coast and capacity developed to implement strategic coastal zone conservation management, with large expansive areas of mangroves, seagrasses and coral reefs conserved and/or rehabilitated and many thousands of fishing families benefitting from improved fishing practices. Information was shared with FAO project development staff and FAO was represented at the PPG workshop in September 2016, and the UNDP/PMU should continue close liaison with FAO during the MyCoast PPG stage to inform design, maximize synergies and avoid redundancy.
Bay of Bengal Large Marine Ecosystem (BOBLME) FAO/GEF Project	**BOBLME** was executed by FAO and engaged with the eight nations that ring the Bay of Bengal (Maldives, India, Sri Lanka, Bangladesh, Myanmar, Thailand, Indonesia and Malaysia) to better the lives of their coastal populations by improving regional management of the Bay of Bengal environment and its fisheries. The project ran from 2008 to 2015 and is now in the process of securing funds for a second phase. Principal funding (estimated budget of USD 31 million) came from the GEF, Governments of Norway and Sweden (SIDA), FAO, participating governments and the National Oceanic and Atmosphere Administration (NOAA). Partners active in Myanmar include the Government of Myanmar, IOSEA, SEAFDEC, IUCN, FFI, and WorldFish. A library of project reports relevant to marine fisheries and ecosystems in Myanmar are available via its website (http://www.boblme.org). UNDP/PMU should maintain contact with FAO to track development of Phase 2 and to participate in related consultations.

Mangroves for the Future (MFF)	**MFF** is a partner-led initiative to promote investment in coastal ecosystem conservation for sustainable development, co-chaired by IUCN and UNDP. It builds on a history of coastal management interventions before and after the 2004 Indian Ocean tsunami, initially focusing on countries worst affected by the tsunami -- India, Indonesia, Maldives, Seychelles, Sri Lanka and Thailand – and more recently expanded to include Bangladesh, Cambodia, Myanmar, Pakistan and Viet Nam. Myanmar joined in 2014 and the FD serves as the National Secretariat. MFF has a small grants programme operating in Pyinburgyi Village Tract, Myeik District with grants awarded to: Myanmar Forest Association for mangrove conservation and coastal protection; Mangrove Service Network for promoting fuel-efficient stoves; and Myanmar Fisheries Federation to promote mangrove friendly crab culture to enhance local livelihoods. MFF, in collaboration with Asian Institute of Technology, also runs a ten-week certified course in Integrated Coastal Management in Bangkok, Thailand, which has been attended by 12 persons from the Tanintharyi Region in 2012-2015 (Forest Department, Department of Fisheries, Myeik University Marine Science Department and NGOs). There are plans to run the course in Myanmar. There is strong scope of synergy with MFF during project implementation, and UNDP/PMU should involve IUCN Myanmar in work planning discussions to ensure synergies are realized, especially with regard to CBNRM in mangrove areas, small grants for communities, planning of mangrove protected areas and related training activities. MFF should invited to participate in the Mangrove Working Group.
Myanmar Fishery Federation (MFF)	**MFF,** founded in 1989, is a national membership organization over 700 companies and 27,000 individuals, with a mandate to promote fishing industries. It aims to promote the socio-economic interests of member entrepreneurs and fishery communities, share information on economic policies and fishery technologies and advocate on behalf of the industry. There are nine associations under MFF that deal with particular industries, such as shrimp, aquaculture feed, marine fisheries, crabs and ornamental fish. MFF has sub-federations at all township, district and state/regional levels; and there is an office in Myeik. MFF is a potential partner for awareness raising, protection and conservation of marine resources. MFF will be invited to Stakeholder Forum meetings and should be included in consultations on marine resource management planning through the Seascape and Mangrove Working Groups.
Myeik University, Ministry of Education (MoE),	**Myeik University** was upgraded from College to University status in 2003. It is likely to have the greatest potential for partnering in the development of a biodiversity data repository and open access web portal, as it already delivers courses in Remote Sensing and GIS as part of undergraduate and postgraduate curricula in Geography[157]. Although human and hardware resources for RS/GIS analyses and data management/sharing are very limited, senior staff in most departments relevant to biodiversity conservation (Marine Science, Zoology, Botany and Geography) have ranked both RS/GIS and information management systems as among their top three priorities for capacity development[158]. FFI has supported GIS training courses for university staff in recent years. The Marine Science Department is best aligned to the project's interests, with its training in integrated coastal management and research on marine fauna and flora in Tanintharyi Region including one of the project's target sites, Thayawthatangyi Island. Myeik University will be a key project partner for Component 3 activities working alongside SI, and will also host the series of three biennial Stakeholder Forum meetings.

Table 4. Proposed actions to mainstream gender into project output implementation

Outcome/ Output	Responsible	Gender Mainstreaming Actions
OUTCOME 1: Land and seascapes rich in biodiversity in Tanintharyi are connected and their planning and management are integrated.		

[157] RS/GIS courses are absent from undergraduate and postgraduate curricula in Zoology and Botany; in Marine Science curricula they are restricted to a single elective course in the second year of the MSc degree.

[158] See PPG National biodiversity survey framework assessment report, April 2016.

Outcome/ Output	Responsible	Gender Mainstreaming Actions
Output 1.1: Inter-sectoral coordination and joint land/seascape planning mechanisms established in regional governance structure to integrate management of ecosystem services and biodiversity, using the High Conservation Value (HCV) approach.	UNDP/PMU	• Proactive inclusion of women in working groups and committees involved in ILSM • Requirement for gender disaggregated information on socio-economic aspects of landscapes, resource use, livelihoods • Requirement to consider support for the most vulnerable HHs in communities in resource use and development planning
Output 1.2: Sector-specific standards, safeguards and incentives to protect Key Biodiversity Areas (KBAs), HCV Forests and High Carbon Stock Forests (HCSFs) developed and operational.	UNDP, FFI, FD, DoF, other sector agencies (plantations, agriculture, tourism, mining, fisheries, etc)	• Proactive inclusion of women in working groups and committees reviewing and developing sector specific standards • Proactive inclusion of women participants in related capacity development activities • Requirement for gender disaggregated information on sector activities
Output 1.3: Integrated land and marine resource-use plans developed and implemented for Myeik and Kawthoung districts, involving community-based natural resource management (CBNRM) and sustainable land and sea management measures, including enforcement.	UNDP, Regional, District & Local Governments, FFI, FD, DoF, other sectoral agencies	• Proactive inclusion of women in ILSM planning and resource use groups and committees • Proactive inclusion of women participants in related capacity development activities • Requirement for gender disaggregated information on sector activities • Proactive inclusion of women in planning for CBNRM and consideration of specific resource issues that address women's interests and reduce labour burdens • Requirement to consider support for the most vulnerable HHs in communities in resource use and development planning
Output 1.4: Tanintharyi PA system expanded through proclamation of new sites that increase its representativeness of HCV biodiversity and cultural diversity, management capacity strengthened and financial viability addressed.	UNDP, FD, DoF, FFI	• Proactive inclusion of women in working groups and committees considering PA system development • Requirement for gender disaggregated information on socio-economic aspects of landscapes, resource use, livelihoods for PA system planning • Requirement for FPIC, consultation with womens groups for communities affected by PA development, and mechanisms to address womens concerns regarding resource access

Outcome/ Output	Responsible	Gender Mainstreaming Actions
Gender indicators: • Stakeholder committees established for new PAs include at least one female community / CBO representative • Working Group specifically to look at women's issues included in regional planning for CBNRM		
OUTCOME 2: Strengthened management and threat reduction in target proposed PAs, smallholder zones and corridors		
Output 2.1: Management and financing plans for target proposed PAs developed and operational with full stakeholder participation.	UNDP, FFI, FD, DoF	• Proactive inclusion of women in PA stakeholder committees • Requirement for gender disaggregated information on socio-economic aspects of landscapes, resource use, livelihoods for PA management planning • Proactive employment of women for conservation related jobs and roles • Requirement for FPIC, consultation with womens groups for communities affected by PA management, and mechanisms to address womens concerns regarding resource access
Output 2.2: PA site operations strengthened to address existing threats to biodiversity.	UNDP, FFI, FD, DoF	As above
Output 2.3: Capacity of communities developed within KBAs, HCV habitats, smallholder zones and corridors for integrated and sustainable management of land/seascapes, including community-based natural resource management.	UNDP, FFI, FD, DoF, Township Govts, Village administrations	• Proactive inclusion of women in ILSM planning and resource use groups and committees • Proactive inclusion of women participants in related capacity development activities • Requirement for gender disaggregated information on sector activities • Proactive inclusion of women in planning for CBNRM and consideration of specific resource issues that address women's interests and reduce labour burdens • Creation of sustainable livelihood and employment opportunities for women • Requirement to consider support for the most vulnerable HHs in communities in resource use and development planning

Outcome/ Output	Responsible	Gender Mainstreaming Actions
Gender indicators: • Female Headed Households are identified as vulnerable in village cluster sustainable development plans and prioritized for social and financial support • At least 40% of USD 755,000 disbursed via small grants programme for sustainable livelihood and village development to female applicants in village clusters		
OUTCOME 3: Emplacement of the National Biodiversity Survey framework and knowledge management for Integrated Land and Seascape Management: Prototype operational in Tanintharyi		
Output 3.1: National Biodiversity Survey framework designed, piloted and institutionalized within Tanintharyi Regional Government	UNDP, SI, FD, DoF	• Proactive inclusion of women in working groups and committees for NBS • Proactive inclusion of women participants in related capacity development and field activities • Requirement for gender disaggregated information on sector activities including traditional knowledge on biodiversity and its sustainable exploitation
Output 3.2: Strengthened capacities of regional universities, research institutions and government agencies (FD and DOF) to survey and monitor biodiversity; and to store, manage and disseminate such data, information and knowledge.	UNDP, SI, MU	• Proactive inclusion of women in working groups and committees • Proactive inclusion of women participants in related capacity development and field activities • Requirement for gender disaggregated information on sector activities including traditional knowledge on biodiversity and its sustainable exploitation
Output 3.3 Development and institutionalization of a modular biodiversity conservation and monitoring training programme in Tanintharyi Region.	UNDP, SI, MU	• As above • Proactive engagement of women participants and representation of womens groups in Tanintharyi Land and Seascape Forum E-group and conferences
Gender indicators: • Tanintharyi Land and Seascape Forum includes at least 5 women's groups, and at least 50 female participants are invited to biannual TLSF conferences • At least 50% female participation in biodiversity courses run with project support at Myeik University		
OUTCOME 4: Enhanced knowledge management, monitoring and evaluation support biodiversity conservation in Tanintharyi		
Output 4.1: Project results and lessons learned are made available to all project stakeholders	UNDP, PMU	• Requirement for gender disaggregated information on sector activities including traditional knowledge on biodiversity and its sustainable exploitation • Proactive attention to lessons learned regarding gender roles in CBNRM and ILSM

Outcome/ Output	Responsible	Gender Mainstreaming Actions
Output 4.2: Project monitoring and evaluation system in place and used to inform project management decision-making	UNDP, PMU All RPs for implementation	• Requirement for gender-disaggregated information for appropriate indicators in the M&E Plan • Specific monitoring of gender mainstreaming progress during project implementation
Gender indicators: • Lessons learned regarding gender roles in CBNRM and ILSM generated by the Working Group on women's issues are reported and disseminated annually as part of project knowledge management • Gender disaggregated indicators in the project Results Framework are monitored and reported on annually		

Annex 21.

Assumptions for Project Theory of Change

A1. Willingness exists between relevant agencies to collaborate at national and land and seascape levels in order to achieve ILSM.
Evidence: A goal has been set by the national government to achieve harmony and balance between economic development and environmental conservation across multiple sectors via the coordination efforts of the National Environment Conservation Committee (NECC). NECC is chaired by the MONREC Minister, and it members include deputy ministers from related ministries. However, inter-sectoral collaboration for integrated landscape management is a recognized weakness in the governance system that this project aims to address. One of the key project proponents is Tanintharyi Regional Government, which is responsible for planning and coordinating land use in the region, and therefore stands to benefit directly from such a collaborative approach. Other key proponents are MoNREC, which covers the forestry and nature conservation sectors, the Ministry of Agriculture and Irrigation, and the Ministry of Livestock, Fisheries and Rural Development. All these stakeholders have been engaged during the PPG process and have expressed their support for the project's approach towards achieving ILSM. There is no doubt that challenges remain to achieve meaningful inter-sectoral collaboration, given that this is a major shift from the traditional narrow sectoral view that has dominated government in Myanmar, but it should be supported by the engagement of a wide range of stakeholders including independent entities.

A2. The recognized benefits of ILSM towards providing ecosystem services, ecological security and biodiversity conservation o utweigh the immediate short term economic benefits of sectoral land development practices
Evidence: The national government is party to CBD, the Ramsar Convention, CITES and other MEAs and these international obligations are reflected in national policy including the NBSAP, National Forest Policy (1995) and National Sustainable Development Strategy (2009). With the current process of decentralization, and the establishment of a new government following elections in 2015, in fact there are many uncertainties as to how the new regional government will address biodiversity conservation and environmental sustainability issues, especially in the face of strong demands and potentially lucrative agreements with private sector investors. The KNU also have an important role to play in this equation, as they manifestly support rural Karen communities including their right to self-determination over land use (versus incoming plantation companies, etc), and much of the forested land within their control remains in good condition. Efforts to sustain the region's ecological security will ultimately contribute towards national security through ensuring continued ecosystem services and by reducing risks from food insecurity and natural disasters.

A3. The MoNREC / FD continue to provide strong political and financial support for the development and operational management of the PA system, as well as science-based integrated management of forest resources as key contributions towards national prosperity and ecological security
Evidence: The National Forest Policy (1995) aims to maintain 30 percent of the country's total land area under Reserved Forests and Public Protected Forest and 5 percent of total land area as Protected Areas. The 30-year National Forestry Sector Master Plan (2001/02 to 2030/31), prepared in the year 2000, has a goal of expanding PAs to 10 percent of the country's total land area. Annual budgets for the Forestry Department under the current Five Year Plan and progress in implementing the priority activities and meeting KPIs under the FYP. Current District Forest Management Plans include proposals for new protected areas covering Lenya PNP and Lenya Extension PNP, and FD has supported the project's inclusion of Reserved Forests (Tha Gyet and Thein Khun RFs) for protection and rehabilitation. Community Forestry Instructions (CFIs) issued by the Forest Department (FD) in 1995 were a remarkable initiative to foster partnership, participation and decentralization in managing the forests including coastal forests and mangroves in Myanmar. The instruction grants the local communities trees and forest land tenure rights for an initial 30-year period

that is extendable based on the success of implementation. The FD provides technical assistance and plays the leadership role in the exercise of community forestry. As an example, there is a proposal by the Tanintharyi Regional Forest Department to allot Protected Public Forest in the Palaw township, and a part of Pyinbugyi Village Tract is also proposed to be a part of the would-be Protected Public Forest. The future management of these areas will require additional capacity and financial support from FD, which the project must support through enabling sustainable financing mechanisms.

A4. The Tanintharyi Regional Government and other key stakeholders continue to be committed to the extension of the PA system, buffer zones and corridors in the face of other demands for land and resources.
Evidence: Myanmar is in the process of devolving power from the national government to regional and local governments. In 2013, the Region or State Parliament Law was promulgated. It is envisaged that an increasing level of authority and responsibility will be decentralized to the regional and state governments, including natural resource management. The government is also in the process of developing the National Land Use Policy. Related to this, MoNREC started an initiative called One Map Myanmar Programme to harmonize the spatial planning data required for land use planning at the national and regional levels. Tanintharyi has been selected as a pilot region under the programme.
After the 2015 election, the winning National League for Democracy formed the new government and political commitment has become stronger on environmental issues and also prioritized on the peoples' desire. Tanintharyi regional government also focuses on environmental conservation and the following are examples of political will as potential strengths of the project:

- The Chief Minister inspected fish meal factories in Myeik Township and temporarily shut down 2 out of 6 factories for not following pollution prevention requirements
- Checked illegal mining.
- Checked oil palm plantations.
- Banned charcoal production in the whole Tanintharyi Region (although it is not clear if this includes significant amounts produced for domestic consumption (note - charcoal making is the main threat to mangrove forests and the main markets are Yangon and Thailand). The FD plans to supply fuelwood and charcoal from natural forest, village fuelwood plantations, home-gardens and community forestry.

A5. Stakeholders responsible for hosting the information system, providing data and information and making use of the information are willing to collaborate and share information and resources openly.
Evidence: The majority of stakeholders consulted during the PPG assessment (e.g. government agencies, academic? institutions and NGOs, see Annex 2 of the report in **Annex 17**, baseline reports on the NBS and knowledge management framework) viewed the creation of a biodiversity data repository and open access web portal as important for facilitating collaborations and information-sharing, and ultimately, to improving capacity for analysis and decision-making (although partial reservations were expressed by some WCS and WWF staff). The extent to which different data holders will contribute to an open access web portal will ultimately depend on the costs and benefits associated with doing so. Open access platforms are an effective approach to data sharing, but their success also depends heavily on ease of use and existence of clear policies and release agreements describing the terms and responsibilities for data provision (including standards for data and metadata), ownership, maintenance, user access levels and subsequent use, liability and attribution. Development of a carefully rationalized policy encouraging contributions and use across the broadest range of stakeholders is therefore essential to effectiveness of the open access web portal.
A6. The National Biodiversity Survey system is sustainable, supported by the host government institutions and easily accessible to all stakeholders
Evidence: There are existing examples of such information systems maintained by some of the same agencies: the Myanmar Clearing House Mechanism, managed by NWCD within the Forest Department; Myanmar Environmental Information Portal, a new website supported by the ADB GMS Core Environment Program and managed by the Environmental Conservation Department of MONREC; Myanmar Information Management Unit (MIMU), established by the UN in 2007 for the purposes of improving capacity for analysis and decision making for a wide variety of stakeholders, MIMU maintains a common data and information repository with data from various sources for a wide range of sectors and likely constitutes the most extensive source of RS/GIS data nationally; and the Myanmar Biodiversity website created by several local and international NGOs (WCS, OIKOS, NYBG, TSA and Helmsley Trust) working on nature conservation in Myanmar.

A7. Involvement in the design and implementation of project interventions and knowledge sharing on the experiences and expected benefits of ILSM practices will result in long-term support for the project and adoption of new knowledge, skills and practices.
Evidence: Strong participation and ownership by the key agencies with mandate for biodiversity conservation (FD and DoF) during project preparation workshops and consultations, and willingness to participate in the Project Board and ~~RTACG~~RACG, and interest in sustainable development from the incoming Tanintharyi Regional Government (including a current review of oil palm concession licences). DoF recently approved four LMMAs in Tanintharyi (October 2016) through collaborative work with FFI; FD have allocated two experienced staff to Lenya PNP for tiger conservation work in collaboration with FFI.

A8. National and regional commitment to democratic sustainable development approaches over sector-led rapid development allows sustainable resource use and biodiversity conservation to be included in planning processes.
Evidence: As for A7, underpinned by national policy for sustainable forest management (Forest Master Plan), biodiversity conservation (NBSAP), and wetland conservation (e.g. participation in the Ramsar Convention).

Annex 21:

Project assumptions for Theory of Change

Annex 21.

Assumptions for Project Theory of Change

A1. Willingness exists between relevant agencies to collaborate at national and land and seascape levels in order to achieve ILSM.
Evidence: A goal has been set by the national government to achieve harmony and balance between economic development and environmental conservation across multiple sectors via the coordination efforts of the National Environment Conservation Committee (NECC). NECC is chaired by the MONREC Minister, and it members include deputy ministers from related ministries. However, inter-sectoral collaboration for integrated landscape management is a recognized weakness in the governance system that this project aims to address. One of the key project proponents is Tanintharyi Regional Government, which is responsible for planning and coordinating land use in the region, and therefore stands to benefit directly from such a collaborative approach. Other key proponents are MoNREC, which covers the forestry and nature conservation sectors, the Ministry of Agriculture and Irrigation, and the Ministry of Livestock, Fisheries and Rural Development. All these stakeholders have been engaged during the PPG process and have expressed their support for the project's approach towards achieving ILSM. There is no doubt that challenges remain to achieve meaningful inter-sectoral collaboration, given that this is a major shift from the traditional narrow sectoral view that has dominated government in Myanmar, but it should be supported by the engagement of a wide range of stakeholders including independent entities.

A2. The recognized benefits of ILSM towards providing ecosystem services, ecological security and biodiversity conservation o utweigh the immediate short term economic benefits of sectoral land development practices
Evidence: The national government is party to CBD, the Ramsar Convention, CITES and other MEAs and these international obligations are reflected in national policy including the NBSAP, National Forest Policy (1995) and National Sustainable Development Strategy (2009). With the current process of decentralization, and the establishment of a new government following elections in 2015, in fact there are many uncertainties as to how the new regional government will address biodiversity conservation and environmental sustainability issues, especially in the face of strong demands and potentially lucrative agreements with private sector investors. The KNU also have an important role to play in this equation, as they manifestly support rural Karen communities including their right to self-determination over land use (versus incoming plantation companies, etc), and much of the forested land within their control remains in good condition. Efforts to sustain the region's ecological security will ultimately contribute towards national security through ensuring continued ecosystem services and by reducing risks from food insecurity and natural disasters.

A3. The MoNREC / FD continue to provide strong political and financial support for the development and operational management of the PA system, as well as science-based integrated management of forest resources as key contributions towards national prosperity and ecological security
Evidence: The National Forest Policy (1995) aims to maintain 30 percent of the country's total land area under Reserved Forests and Public Protected Forest and 5 percent of total land area as Protected Areas. The 30-year National Forestry Sector Master Plan (2001/02 to 2030/31), prepared in the year 2000, has a goal of expanding PAs to 10 percent of the country's total land area. Annual budgets for the Forestry Department under the current Five Year Plan and progress in implementing the priority activities and meeting KPIs under the FYP. Current District Forest Management Plans include proposals for new protected areas covering Lenya PNP and Lenya Extension PNP, and FD has supported the project's inclusion of Reserved Forests (Tha Gyet and Thein Khun RFs) for protection and rehabilitation. Community Forestry Instructions (CFIs) issued by the Forest Department (FD) in 1995 were a remarkable initiative to foster partnership, participation and decentralization in managing the forests including coastal forests and mangroves in Myanmar. The instruction grants the local communities trees and forest land tenure rights for an initial 30-year period that is extendable based on the success of implementation. The FD provides technical assistance and plays the leadership role in the exercise of community forestry. As an example, there is a proposal by the Tanintharyi Regional Forest Department to allot Protected Public Forest in the Palaw township, and a part of Pyinbugyi Village Tract is also proposed to be a part of the would-be Protected Public Forest. The future management of these areas will require additional capacity and financial support from FD, which the project must support through enabling sustainable financing mechanisms.

A4. The Tanintharyi Regional Government and other key stakeholders continue to be committed to the extension of the PA system, buffer zones and corridors in the face of other demands for land and resources.

Evidence: Myanmar is in the process of devolving power from the national government to regional and local governments. In 2013, the Region or State Parliament Law was promulgated. It is envisaged that an increasing level of authority and responsibility will be decentralized to the regional and state governments, including natural resource management. The government is also in the process of developing the National Land Use Policy. Related to this, MoNREC started an initiative called One Map Myanmar Programme to harmonize the spatial planning data required for land use planning at the national and regional levels. Tanintharyi has been selected as a pilot region under the programme.

After the 2015 election, the winning National League for Democracy formed the new government and political commitment has become stronger on environmental issues and also prioritized on the peoples' desire. Tanintharyi regional government also focuses on environmental conservation and the following are examples of political will as potential strengths of the project:

- The Chief Minister inspected fish meal factories in Myeik Township and temporarily shut down 2 out of 6 factories for not following pollution prevention requirements
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A5. Stakeholders responsible for hosting the information system, providing data and information and making use of the informa tion are willing to collaborate and share information and resources op enly.

Evidence: The majority of stakeholders consulted during the PPG assessment (e.g. government agencies, academic? institutions and NGOs, see Annex 2 of the report in **Annex 17**, baseline reports on the NBS and knowledge management framework) viewed the creation of a biodiversity data repository and open access web portal as important for facilitating collaborations and information-sharing, and ultimately, to improving capacity for analysis and decision-making (although partial reservations were expressed by some WCS and WWF staff). The extent to which different data holders will contribute to an open access web portal will ultimately depend on the costs and benefits associated with doing so. Open access platforms are an effective approach to data sharing, but their success also depends heavily on ease of use and existence of clear policies and release agreements describing the terms and responsibilities for data provision (including standards for data and metadata), ownership, maintenance, user access levels and subsequent use, liability and attribution. Development of a carefully rationalized policy encouraging contributions and use across the broadest range of stakeholders is therefore essential to effectiveness of the open access web portal.

A6. The National Biodiversity Survey system is sustainable, supported by the host government institutions and easily accessible to all stakeholders

Evidence: There are existing examples of such information systems maintained by some of the same agencies: the Myanmar Clearing House Mechanism, managed by NWCD within the Forest Department; Myanmar Environmental Information Portal, a new website supported by the ADB GMS Core Environment Program and managed by the Environmental Conservation Department of MONREC; Myanmar Information Management Unit (MIMU), established by the UN in 2007 for the purposes of improving capacity for analysis and decision making for a wide variety of stakeholders, MIMU maintains a common data and information repository with data from various sources for a wide range of sectors and likely constitutes the most extensive source of RS/GIS data nationally; and the Myanmar Biodiversity website created by several local and international NGOs (WCS, OIKOS, NYBG, TSA and Helmsley Trust) working on nature conservation in Myanmar.

A7. Involvement in the design and implementation of project interventions and knowledge sharing on the experiences and expected benefits of ILSM practices will result in long-term support for the project and adoption of new knowledge, skills and practices.

Evidence: Strong participation and ownership by the key agencies with mandate for biodiversity conservation (FD and DoF) during project preparation workshops and consultations, and willingness to participate in the Project Board and ~~RTACG~~RACG, and interest in sustainable development from the incoming Tanintharyi Regional Government (including a current review of oil palm concession licences). DoF recently approved four LMMAs in Tanintharyi (October 2016) through collaborative work with FFI; FD have allocated two experienced staff to Lenya PNP for tiger conservation work in collaboration with FFI.

A8. National and regional commitment to democratic sustainable development approaches over sector-led rapid development allows sustainable resource use and biodiversity conservation to be included in planning processes.

Evidence: As for A7, underpinned by national policy for sustainable forest management (Forest Master Plan), biodiversity conservation (NBSAP), and wetland conservation (e.g. participation in the Ramsar Convention).

Annex 22:

Threats to Biodiversity, Underlying Factors and Baseline Analysis

Threats to Biodiversity

Threats to biodiversity have been systematically reviewed at the national level in 2005[159] and later in 2012[160]. These remain largely relevant and those of greatest impact on the Tanintharyi landscapes and seascapes covered by the project are summarized below. Further details can be found in the baseline reports (**Annexes 16 & 17**) and, in the case of site-specific threats, landscape profiles (**Annex 12)** developed for this project.

Plantation development: The outstanding biodiversity of the Tanintharyi region is under increasingly severe threat. Lowland forests in the Tanintharyi Range Corridor that support significant populations of globally threatened species, such as tiger, elephant and the endemic Gurney's pitta, are under immediate threat from land conversion to oil palm and rubber plantations. Already, some 50 plantation licences have been issued in the region amidst a trend of increasing interest in the development of this sector. According to a 2015 Forest Trends report[161], forest clearing for the expansion of commercial agriculture is now the leading cause of degradation. While this process has been occurring for decades, the current rate of forest conversion for plantations is unprecedented. Concessions were issued for 16 km^2 of oil palm and rubber plantations within the Permanent Forest Estate (PFE) in 2013-2014. The laws, regulations, and procedures by which these concessions are allocated, especially those involving degazetting of forest reserves or those located within forest reserves, are spread across numerous uncoordinated jurisdictions through use of legal loopholes, specific permits and exemptions. In addition, the vast majority of existing oil palm estates are not certified by the Round Table on Sustainable Palm Oil (RSPO), pay little or no attention to RSPO environmental and social guidelines and consequently have major impacts on biodiversity and environmental quality. An underlying cause for the palm oil concession development is the past Government policy aiming at rapid expansion of the evolving oil palm industry in the Tanintharyi region. It also imposed upon the industry, not only social, environmental and implications, but also the basis for an unsustainable and enduring poor performance of the industry.

Data from the Department of Industrial Crop Development (DICD) for 2014 provided indicates that a total of almost 1,000,000 acres (almost 405,000 ha) have been allocated by the Government of Myanmar to 44 Oil Palm Plantation companies to develop plantations in the Kawthoung, Myeik and Dawei Districts of the Tanintharyi region. Of that land area, almost 350,000 acres (±142,000 ha) have been planted, with some 283,000 acres (±115,000 ha) in Kawthoung, 46,000 acres (±19,000 ha) in Myeik, and 17,000 acres (±7,000 ha) in Dawei District. Of the 44 companies concerned, apparently 43 are Myanmar owned (three foreign companies have Joint Venture Agreements (JVA) with local companies), and one is the result of FDI. Deforestation from the rubber and oil palm sector (assumed to be areas >50 acres to exclude smallholdings) is a major contributor to forest loss in Myeik (43%) and the dominant contributor in Kawthoung District (76%). Annual deforestation rates are very high in Tanintharyi and the highest deforestation rates are in areas with many oil palm concessions. The concessions may also be displacing communities inland to forested areas.

Over-exploitation of forest resources*:* Unsustainable and/or illegal logging and illegal wildlife trade also pose major threats to biodiversity. Forest products are over exploited particularly through resource extraction quotas sold to local businesses that often overlap with PA boundaries and can be politically sensitive to enforce. In the forestry sector, promising new reforms are underway, but so far have focused only on FD-managed timber estates. The remaining natural forests in the country's resource-rich, ethnic minority areas remain outside any effective forest management and are vulnerable to extensive logging and conversion[162]. Much of the deforestation in Tanintharyi is, however, linked to land conversion for plantations – for example, Yuzana Company and Htoo Trading, the latter of which is one of the country's most dominant private timber companies, are the two biggest companies operating in the palm oil sector based in Tanintharyi Region, both of which were granted associated rights over timber extraction in

[159] Tordoff, A. W., Eames, J. C., Eberhardt, K., Baltzer, M. C., Davidson, P., Leimgruber, P., Uga & Aung Than 2005. *Myanmar Investment Opportunities in BiodiversityConservation,* Birdlife International, Yangon, Myanmar.

[160] Wildlife Conservation Society 2013. Myanmar Biodiversity Conservation Investment Vision, Wildlife Conservation Society, Yangon, Myanmar

[161] Woods, K. 2015. Agro-Timber Conversion in Myanmar: The next driver of deforestation. Forest Trends, Washington D.C.

[162] Woods, K. 2013. Timber Trade Flows and Actors in Myanmar: The Political Economy of Myanmar's Timber Trade. Forest Trends, Washington D.C.

their project areas[163]. According to Springate-Baginski et al. 2015[164], in Dawei District, many forest reserves are partly or entirely degraded. Further, around town areas, along the coast, along the main road to Thailand, and in the extreme south of Kawthoung District, large plantations are replacing degraded as well as intact forest -within and outside forest reserves. Field observations confirmed such large-scale conversion of forest to other land-uses, but careful and selective harvesting was observed in intact forest.

In mangrove areas, cutting of mangrove trees for charcoal making is the main threat to the forests at present, the charcoal being sold to Yangon and Thailand. Domestic charcoal consumption is around 130,000 cu.ton for Myeik District and 75,000 cu.ton for Kawthoung District annually. In response, the Tanintharyi regional government has banned charcoal production across the whole region, although it is unclear whether this includes charcoal for domestic consumption, and the Forest Department plans to supply fuelwood and charcoal sustainably from natural forests, village fuelwood plantations, home-gardens and community forestry[165].

Urban and industrial development: The Dawei Development Corridor Project is a major strategic initiative, connecting countries of the Greater Mekong Subregion (GMS) Southern Corridor via shipping routes from Dawei to India. It includes associated infrastructure development such as Dawei Deep Sea Port and Industrial Estate covering an area of 250 km², a steel mill, petrochemical complex, coal-fired power plant, fertiliser plant, refinery and gas complex, pulp and paper and many other industries. These will be linked to Thailand by a 160 km 4-lane to 8-lane toll highway across the biodiversity-rich Tenasserim Mountain Range. The corridor from the coast of Myanmar to the border town of Thailand will consist of roads, railways, transmission lines, and oil and gas pipelines. Two government and ITD (Italian-Thai Development PCL) companies have signed for first-phase contract for the 10-year project which is worth an estimated USD 8 billion. There is substantial concern over social and environmental impacts in Dawei expressed by local CSOs such as Dawei Development Association.[166] [167] No EIA or SEA have yet been made available. Concerns over the road corridor include the fragmentation of the contiguous forest of the Tanintharyi Range Corridor, soil erosion in the mountainous interior, and impacts on water quality. Development of the deep sea port is also likely to impact coastal habitats and coastal water quality.

Soil erosion, sedimentation and pollution*:* Erosion resulting from land clearance, logging and plantation operations in the watershed increases sediment loading of rivers draining the respective catchment areas. However, at present there is almost no published information on such environmental impacts in Tanintharyi, and the water quality of the Myeik Archipelago showed no indications of related pollution during assessments under the BOBLME Programme.[168] [169] Terrestrial and marine pollution threats are on a sharp increase from extractive industries (e.g. offshore oil and gas production, and onshore copper, gold, tin, zinc and coal mining, etc.), aquaculture (e.g. shrimp farming) and construction in coastal areas such as seaport development. More than 50 mining companies have applied for a government license to explore for tin, tungsten, lead, coal and gold reserves in the Tanintharyi while currently, ten firms are licensed to carrying out mining and prospecting operations in the area.[170]

Over-exploitation of fisheries*:* Fishing rights are sold by auction, often resulting in commercial over-harvesting while at the same time impacting the subsistence needs of local communities. The decline of fishery resources is a major concern for the government, as local fishermen are reporting drastic reductions in their catches. This has led to a recent decision by the government to halve the off-shore fishing season from 90 to 45 days. Continued widespread illegal fishing by foreign vessels with modern equipment has seriously depleted fishery resources and represents massive leakage of national revenue. The critically weak capacity of the Department of Fisheries for monitoring and enforcing marine fisheries laws and its weak coordination and influence with other enforcement agencies are key contributing factors.

[163] Woods, K. 2013. Timber Trade Flows and Actors in Myanmar: The Political Economy of Myanmar's Timber Trade. Forest Trends, Washington D.C.

[164] Springate-Baginski O, Treue T, Kyaw Htun. 2015. Beyond over-logging? From military-era timber exploitation towards democratic and sustainable forest Governance. University of East Anglia, UK; University of Copenhagen; EcoDev.

[165] See Annex 16 for details

[166] https://www.facebook.com/DaweiDevelopmentAssociation/

[167] http://www.burmalibrary.org/show.php?cat=3266

[168] http://www.boblme.org/documentRepository/Nat_Myanmar.pdf

[169] http://www.boblme.org/documentRepository/Theme_%20Land%20Based%20Pollution%20-%20%20Urusla%20Kaly.pdf

[170] http://www.irrawaddy.com/news/burma/dawei-village-sue-thai-mining-firm-environmental-impacts.html

***Climate Change and Vulnerability*:** According to the IPCC's Fifth Assessment Report (AR5)[171], across South East Asia, temperature has been increasing at a rate of 0.14°C to 0.20°C per decade since the 1960s, coupled with a rising number of hot days and warm nights, and a decline in cooler weather. Annual total wet-day rainfall has increased by 22 mm per decade, while rainfall from extreme rain days has increased by 10 mm per decade, but climate variability and trends differ vastly across the region and between seasons. Future increases in precipitation extremes related to the monsoon are *very likely* in Southeast Asia. The ocean in subtropical and tropical regions will warm in all IPCC AR5 scenarios and will show the strongest warming signal at the surface.

The AR5 states with high confidence that coastal and marine systems in Asia are under increasing stress from both climatic and non-climatic drivers. It is likely that mean sea-level rise will contribute to upward trends in extreme coastal high water levels. Mangroves, salt marshes and seagrass beds may decline unless they can move inland, while coastal freshwater swamps and marshes will be vulnerable to saltwater intrusion with rising sea-levels. Widespread damage to coral reefs correlated with episodes of high sea-surface temperature has been reported in recent decades and there is high confidence that damage to reefs will increase during the 21st century because of both warming and ocean acidification. Marine biodiversity may decrease in the tropics if thermal tolerance limits are exceeded.

There is another dimension to what has been described above and that is changes will 'yoyo' in at least some cases. For example, mean annual rainfall in the Tanintharyi region is predicted to decline by up to 15% of the 1980s baseline by the 2030s and, thereafter, increase by up to 25% by the 2060s and 50% by the 2090s (**Figure 3**) (Southeast Asia START Regional Center - SEA START). The clear message is that climate changes will not necessarily always be in one direction, they may swing like a pendulum and less predictably than a pendulum. Therefore, long term survival of biodiversity and ecosystem services that are the product of such diversity is about maintaining the natural resource base (natural capital) and its diversity.

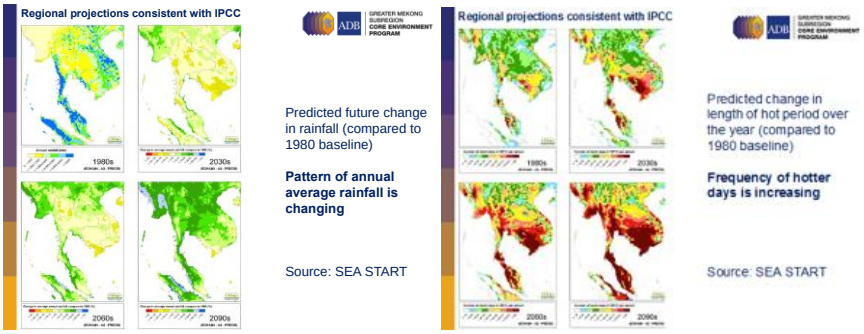

Figure 3. Predicted future change in rainfall for SE Asia (left), and change in length of hot period over the year (right). Source: SEA START / ADB GMS.

The implications of climate change for biodiversity conservation planning in Myanmar have been reviewed by Rao et al (2013)[172], with key points as follows[173]. High temperatures and droughts are expected to be the norm, and are likely to be associated with more frequent forest fires in certain regions. Given experiences elsewhere in SE Asia (e.g. in Sumatra), it can be considered likely that forest fire frequency will increase in Tanintharyi region associated with increasing pressures for land clearance for plantations, exacerbated by dry periods linked to periodic El Nino conditions. Conversely, an increase in rainfall during the monsoon season is likely to cause flooding events that could affect livelihoods, transport, and homes. Prevailing and anticipated climatological changes have both direct impacts on biodiversity (see below) or exacerbate the impacts of current threats such as deforestation on biodiversity. Low-lying coastal areas in Tanintharyi region are expected to be vulnerable to intense rainfall. High impacts of sea level rise, cyclones, high winds and storm surges in coastal areas will affect mangroves and other coastal habitats and communities.

[171] IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 688.

[172] Rao M, Saw H, Platt SG, Tizard R, Poole C, Than Myint, Watson JEM. 2013. Biodiversity Conservation in a Changing Climate: A Review of Threats and Implications for Conservation Planning in Myanmar. AMBIO 2013, 42:789–804. DOI 10.1007/s13280-013-0423-5.

[173] While this pre-dates the IPCC's Fifth Assessment Report, the conclusions and strategic recommendations for conservation remain relevant.

The review indicates that climate change poses major new challenges to biodiversity conservation as species will be exposed to changes at a rate and magnitude seldom previously experienced, with direct consequences for ecosystem assemblage and the services they provide to humanity[174,175]. However, there is still much to learn before the impacts of climate change on species diversity in Myanmar can be accurately assessed, with a few exceptions.

Overall, ecoregions in Myanmar will be variably affected by climatic impacts and sound interpretation of analyses will be critically important for effective adaptation planning for both species and human communities. The ecoregions in Tanintharyi can be expected to experience climatic change impacts. Temperature and rainfall changes in the Tenasserim Semi-Evergreen Tropical Forests in Tanintharyi can be expected to alter the bioclimatic envelope for many tropical species. Remaining examples of freshwater swamp forest, in permanently or seasonally inundated lowlands are expected to be climatically more unstable than dryland rainforest types.

In the case of Tanintharyi's outstanding coastal ecosystems: the mangroves, coral reefs, seagrass beds and the diverse shorelines of the Myeik Archipelago, in the nearer term, sea level rise and increased water temperatures will accelerate beach and coastal erosion and cause degradation of estuarine communities, mangroves and coral reefs with ultimate impacts on water supply and fisheries productivity[176]. IPCC AR5[177] states with high confidence that continuation of current trends in sea-surface temperatures and ocean acidification would result in large declines in coral-dominated reefs by mid-21st century.

Future rates of sea-level rise are expected to exceed those of recent decades, increasing coastal flooding, erosion, and saltwater intrusion into surface and groundwater. In the absence of other impacts, coral reefs may grow fast enough to keep up with rising sea-levels, but beaches may erode and mangroves, salt marshes, and seagrass beds will decline, unless they receive sufficient fresh sediment to keep pace or they can move inland[178]. Sea level rise is expected to impact globally threatened species of migratory shorebirds through the loss of intertidal mud flats[179,180]. Breeding colonies of seabirds and turtles may be particularly vulnerable to sea level rise[181]. Ocean acidification leads to reduction in coral calcification and affects coral reefs which provide habitat for about a quarter of all marine species and are the most diverse among marine ecosystems[182]. Acidification is also expected to have negative impacts on other calcified marine organisms (algae, molluscs, larval echinoderms)[183].

Observations, experiments, and simulation models show that climate change would result in changes in primary productivity, shifts in distribution and changes in the potential yield of exploited marine species, resulting in impacts on food security and the economics of fisheries[184]. Similarly, climate change impacts on coastal ecosystems will have implications for human populations as they provide many functions, services and goods in terms of coastal protection and sediment retention, nurseries and habitats for

[174]Foden, W.B., G.M. Mace, J.-C. Vie´, A. Angulo, S.H.M. Butchart, L.DeVantier, H.T. Dublin, A. Gutsche, et al. 2009. Species susceptibility to climate change impacts. In Wildlife in a changing world: An analysis of the 2008 IUCN Red List of Threatened Species, ed. J.C. Vie´, C.H. Taylor, and S.N. Stuart.Gland, Switzerland: IUCN.

[175]Watson, J.E.M., M. Cross, E. Rowland, L.N. Joseph, M. Rao, and A.Seimon. 2011a. Planning for species conservation in a time of climate change. Climate Change: Research and technology for climate change adaptation and mitigation 3: 379–402. http://www.intechopen.com/articles/show/title/planning-for-speciesconservation-in-a-time-of-climate-change.

[176] Grantham, H.S., E. McLeod, A. Brooks, S.D. Jupiter, J. Hardcastle, A.J. Richardson, E.S. Poloczanska, T. Hills, N. Mieszkowska, C.J. Klein, and J.E.M. Watson. 2011. Ecosystem-based adaptation in marine ecosystems of tropical Oceania in response to climate change. Pacific Conservation Biology 17: 241–258.

[177] IPCC AR5 - ibid

[178] IPCC AR5 - ibid

[179] Buckton, S.T., and R.J. Safford. 2004. The avifauna of the Vietnamese Mekong Delta. Bird Conservation International 14: 279–322.

[180] Tordoff, A.W., J.C. Eames, K. Eberhardt, M.C. Baltzer, P. Davidson, P. Leimgruber, Uga, and Aung Than. 2005. Myanmar investment opportunities in biodiversity conservation. Yangon, Myanmar: Birdlife International.

[181] Duffy, D.C. 2011. No room in the Ark? Climate change and biodiversity in the Pacific Islands of Oceania. Pacific Conservation Biology 17: 192–200.

[182] Roberts, C.M., C.J. McClean, J.E.N. Veron, J.P. Hawkins, G.R. Allen, D.E. McAllister, C.G. Mittermeier, F.W. Schueler, M. Spalding, and F. Wells. 2002. Marine biodiversity hotspots and conservation priorities for tropical reefs. Science 295: 1280–1284.

[183] IPCC AR5 - ibid

[184] Sumaila, U.R., W.W.L. Cheung, V.W.Y. Lam, D. Pauly, and S. Herrick. 2011. Climate change impacts on the biophysics and economics of world fisheries. Nature Climate Change 1: 449–456.

aquatic organisms and feeding grounds for economically important species of fish. For biodiversity conservation within a changing climate, adaptation planning will be key to ensuring minimum impacts on species and ecosystem services.

Similarly, climate change impacts on coastal ecosystems will have implications for human populations as they provide many functions, services and goods in terms of coastal protection and sediment retention, nurseries and habitats for aquatic organisms and feeding grounds for economically important species of fish. The response of human populations to climate change will almost certainly place greater pressures on Myanmar's biodiversity. Upland crop production, practiced close to the margins of viable production and often dependent on rain-fed agriculture, can be highly sensitive to climatic variability. In coastal areas, sea-level rise, increased storm frequency and severity, and declining fish catches will increase pressures on communities to seek alternative protein sources and livelihood options[185].

Indirect Pressures on Biodiversity (Root Causes)

The root causes of these threats include unplanned fast economic growth, population increase, poverty, poor govenance, and lack of awareness of biodiversity values and related policies. Refugees returning from Thailand and internally displaced persons will bring additional pressures, especially if resettled in environmentally sensitive areas without guidance and support for sustainable livelihood practices.[186]

Economic growth: Myanmar is ranked 148 out of 188 countries on the Human Development Index (in the low human development category), but this has increased by 60.3% between 1980 and 2014 and Myanmar's GNI per capita increased by about 481.8 percent over the same period[187]. Economic growth has averaged 5 percent in recent years, with an annual per capita income of USD$702. Myanmar is undergoing a rapid political and economic transition that presents both opportunities and threats to biodiversity. The ADB[188] concluded that "Myanmar's current growth pattern is placing huge pressure on its environment and, if continued, will certainly be unsustainable given the country's continued population increase, expected rapid industrialization, increased consumption of and demand for natural resources for food production and trade, and increased energy consumption". In the Tanintharyi Region, major strategic economic developments, such as the Dawei Development Corridor, the rapid expansion of commercial rubber and oil palm plantations at the expense of natural forest habitats and increase in coastal development, exemplify this concern. These trends are set to continue and if not governed by strengthened policy, planning and regulatory frameworks embodying sustainability criteria supported by increased regional capacity for sustainable development, will result in the rapid loss of natural capital, ecosystem services, ecological and, ultimately, political security.

Population increase: While population increase is not identified as a top priority driver of threats to biodiversity in the Myanmar Biodiversity Investment Vision (WCS 2013), it is relevant in the Tanintharyi context, as growth in the regional population can be expected to be significant with greater social liberation and accompanying the prospect of rapid economic growth. Inevitably such population growth will exert increasing pressures on the region's natural resource base, especially where it involves the settlement of returning refugees and IDPs in new areas. The project land and seascapes encompass parts of Kyunsu, Tanintharyi and Bokpyin townships. The total population in the project area of 1,452,658 ha is estimated to be 145,230 (10.3% of population in Tanintharyi Region), based on spatial analysis of 2014 village tract census data. PPG survey results of 9 villages indicate 94 males: 100 females; average family size is 5.1; average size of village population is 490 persons. See **Annex 15** for more details on local population characteristics.

Poverty*:* Poverty levels are at an estimated 26% of the population. Poverty is twice as high in rural areas where 70% of the population lives. The remote border areas, mainly populated by Myanmar's minority ethnic groups, and areas emerging from conflict are particularly poor. Access to electricity is limited to only 26 percent of the population and firewood (including mangrove charcoal) is a major source of energy for the population[189]. This situation is exacerbated in Tanintharyi by returning refugees from camps along the Thai border and the need to find land for resettlement of IDPs.

[185] Rao et al. 2013. ibid

[186] UNHCR estimates a total of about 400,000 individuals were still internally displaced in the rural areas of 36 townships in South-East Myanmar in Kayin, Kayah, South and East Shan and Mon States, and Bago and Tanintharyi Regions. (2008-2012, South East Myanmar: A Report on Village Profiles 2008-2012)

[187] http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MMR.pdf

[188] ADB 2012. Myanmar: Interim Country Partnership Strategy 2012-2014. Country Planning Documents.

[189] http://www.mm.undp.org/content/myanmar/en/home/countryinfo.html

***Lack of awareness and integration of biodiversity values into regional planning*:** The lack of understanding of the economic, social and political (in terms of national security) values of the Natural Capital and the ecosystem services it provides to society is a major factor in its erosion for short-term gains in regionall and national economic planning. This lack of understanding is a weakness of both the public and within the government. For example, one recent study[190] estimated that the value of Myanmar's overall forest ecosystem services is over $7 billion USD. Of this, income earned from forest utilisation accounts for less than 15% of the value estimated in this study. By far the largest share – 85%, or around $6 billion USD – comes from forest ecosystem services such as forest carbon sequestration, watershed protection services, insect pollination, tourism, and mangrove protection of coastlines and fish nurseries. Thus, investment in forest conservation is expected to deliver significant net returns, estimated at around $39 billion USD over the next twenty years, or a net present value of $10 billion USD. A wider lack of awareness of environmental issues and understanding of government policies on the environment was seen as the most frequent root cause of biodiversity loss during the national analysis in 2012[191].

Failure or absence of good governance mechanisms: While the forest management system is well established and has the capacity to operate effectively in Myanmar, it has been abused in the recent past with massive profits from this national asset benefiting small elites, while negatively impacting the forestry and timber sectors. The result has included: systematic 'revenue-target' driven over-extraction of timber resulting in forest degradation and loss; expansion of agriculture and 'land grab' agri-business concessions destroying forests (including areas within reserved forests); and insecure land and tree tenure for local people, marginalising civil society and undermining incentives to conserve, protect and plant trees, and to collaborate with the Forest Department[192].

Baseline Activities

In the country's democratization process, the government has been striving to achieve both a green economy and green growth in the country – a growth pattern that learns from mistakes made by other countries in the region when faced with similar conditions of rapid growth and transition, generally characterized by economic growth that results in wealth disparity among populations at the expense of ecosystem degradation and biodiversity loss. Since 2011, the Myanmar government with the support of the **Green Economy Green Growth (GEGG) Association of Myanmar**, has been engaged in high level discussions with eminent thinkers and practitioners from both public and private sectors around the world, to explore ways and mechanisms to achieve a sustainable path for Myanmar's development. The Green Economy Green Growth Forum will continue to be held with an annual budget of approximately $ 100,000, with over $ 300,000 of in-kind contributions from international and national speakers providing a major platform that influences the course of the nation's development.

In the specific field of biodiversity and ecosystem services management, in order to protect the country's outstanding biodiversity, the Myanmar government has designed a network of 43 PAs. Thirty-six of these have been officially gazetted under the Protection of Wildlife and Protected Areas Law, while seven remain proposed. The 36 PAs cover 5.6% of the total land area of the country, and the addition of the seven proposed PAs would increase this to 6.7%.

In 2001, the Government of Myanmar approved a 30-year Forest Master Plan to increase the Permanent Forest Estate (constituted by reserved forests and public protected forests) to 30% PAs to 10% of the total country area. Furthermore, the Forest Master Plan encourages the registration of unclassified forests into community or private forests. The government invests approximately US$ 750,000 in PA management annually. Myanmar is a partner of the Global Tiger Initiative and was represented at the Global Tiger Summit in St. Petersburg in September 2010 by the then Minister of Forestry. It submitted a National Tiger Recovery Plan (NTRP), as part of the Global Tiger Recovery Plan in June 2010. To support the goal of the Tiger Range Countries, the German government made a commitment of EUR 20 million. With these funds KfW, the German Development Bank, has launched the Integrated Tiger Habitat Conservation Programme Asia - together with IUCN in January 2014[193]. Under this programme, a new Tanintharyi Tiger Project was launched at a workshop in May 2016 in Myeik[194] and will run for an initial three years with a budget of 1-1.5 million Euros, aiming to

[190]Emerton, L. and Yan Ming Aung. (2013) The Economic Value of Forest Ecosystem Services in Myanmar and Options for Sustainable Financing. International Management Group, Yangon.

[191] Wildlife Conservation Society 2013. Myanmar Biodiversity Conservation Investment Vision, Wildlife Conservation Society, Yangon, Myanmar

[192] *Oliver Springate-Baginski, Thorsten Treue, Kyaw Htun. September 2015. Beyond over-logging?* From military-era timber exploitation towards democratic and sustainable forest governance.

[193]https://www.kfw-entwicklungsbank.de/PDF/Entwicklungsfinanzierung/L%C3%A4nder-und-Programme/Asien/Myanmar_Tiger_2016_EN.pdf ; https://www.iucn.org/theme/species/our-work/action-ground/integrated-tiger-habitat-conservation-programme

[194] http://www.fauna-flora.org/news/last-roar-for-tanintharyi-tigers/

establish and support tiger and prey monitoring, community patrolling, improved law enforcement, support for village forest management, ecotourism pilots, and improved cooperation with Thailand. This new initiative will be implemented by FFI and FD with support from other partners and is funded by the German KfW Development Bank, through the Integrated Tiger Habitat Conservation Project that is managed globally by IUCN.

Myanmar is in the process of devolving power from the national government to regional and local governments. In 2013, the Region or State Parliament Law was promulgated. It is envisaged that an increasing level of authority and responsibility will be decentralized to the regional and state governments, including natural resource management. The government is also in the process of developing the National Land Use Policy. Related to this, MoNREC[195] (formerly MOECAF), started an initiative called One Map Myanmar Programme to harmonize the spatial planning data required for land use planning at the national and regional levels with technical assistance from the University of Bern and financed by Swiss Agency for Development and Cooperation (SDC) (CHF 1795203 for the first two years of 8 year initiative). Tanintharyi has been selected as a pilot region under the programme.

The Government of Myanmar invests approximately US$ 750,000 in PA management annually. In the Tanintharyi Range Corridor, there are 3 existing PAs covering 195,402 ha and two proposed PAs covering 523,159 ha. In 2014, two new marine PAs in the biodiversity-rich Myeik Archipelago (in Tanintharyi Marine Corridor) were proposed based on scientific surveys conducted with support from FFI and SI. However, a large proportion of the area of identified KBAs and Priority Corridors in Tanintharyi Region remain unprotected. With US$ 3 million support from the **International Tropical Timber Organisation (ITTO),** MoNREC is working on the 4-year "Capacity Building for Strengthening Transboundary Biodiversity Conservation of the Tanintharyi Range in Myanmar" (2013-2016)[196]. The project provides targeted capacity building support for improving transboundary biodiversity conservation between Myanmar and Thailand, with particular focus on the Tanintharyi Range. The project aims to establish institutional mechanisms for trans-boundary biodiversity conservation between the two countries, and supports trans-boundary research and joint actions. It also supports targeted research and work to engage community participation and livelihood support in the area of the proposed Tanintharyi National Park.

In the country's effort to safeguard biodiversity and ecosystem services, one of the most pressing issues is the highly limited availability of information and human resources and capacity to generate and apply such information. In response, Project partner agencies have been working closely with the MoNREC in support of a 10-year Strategic Framework for "**Building the Foundation for Natural Resource Stewardship, for Sustainable, Inclusive and Equitable Development" for 2015-2025**. The 10-Year Strategy aims to accelerate capacity development for better stewardship of natural resources, directly implementing the capacity development needs identified under the National Biodiversity Strategy and Action Plan (NBSAP). It also aims to promote sustainable, inclusive and equitable economic development, reduce poverty and conserve the rich natural heritage of the county for present and future generations. The Framework, presented to the Minister of (then) MOECAF in November 2013, will initially focus on building the necessary scientific foundation and trialing the application of scientific knowledge for biodiversity stewardship in close collaboration with the SI, FFI, GEGG, UNDP and other partners. The necessary financial resources for implementation of the Strategic Framework are estimated to be $128,500,000, including plans for establishing a $100 million trust fund. This proposed Ridge to Reef project is anchored on the Framework.

A number of other governmental and civil society organisations have also provided capacity development support to the country. Scientists from the **Smithsonian Institution** have been studying the biodiversity and ecology of Myanmar over the last 20 years and, since 1993, the SI has trained more than 300 MoNREC staff, completed 50 research projects, 150 science publications, aided in the discovery of over 70 species new to science, and located and identified hundreds of critical species. **Fauna and Flora International (FFI)** supports a range of biodiversity conservation programmes in Myanmar, including community forest programmes and collaborative PA management initiatives in Kachin, which led to the discovery of the snub-nosed monkey. In addition, the **Wildlife Conservation Society (WCS)** supports strengthening the country's capacity for conducting biological surveys, monitoring populations of key wildlife species, supporting establishment of protected area and management actions. WCS supported the Tanintharyi Forest Department in development of the regional forestry plan, and has supported Tanintharyi Nature Reserve development and management by developing the park management plan and introducing the SMART patrol system. WCS is also the CSO implementing partner for the GEF-5 PA strengthening project which will start implementation in late 2014, with focus on the northern tiger landscape. Furthermore, **World Wildlife Fund (WWF)** established its Myanmar Office in 2014 with a new Myanmar

[195] During the process of Union Government restructuring in early 2016, the Ministry of Environmental Conservation and Forestry (MOECAF) was renamed as the Ministry of Natural Resources and Environmental Conservation (MoNREC).
[196] http://www.itto.int/council_committees/projects/

country programme. The programme includes support for Tanintharyi region, in particular, integration of green economy principles and development of a capital strategy with focus on the Dawei Development Corridor in northern Tanintharyi.

Mangroves for the Future (MFF) is a partnership-based initiative promoting investment in coastal ecosystems for sustainable development, working towards achieving the vision of a healthier, more prosperous and secure future for all coastal communities. Published in 2015, the National Strategy and Action plan (NSAP) is the product of a long collaborative process by the National Coordinating Body (NCB), including governmental organizations, UN agencies, INGOs, NGOs, academic institutions, and private organizations. It prioritizes five collective actions: environmental profiling, capacity development, integrated coastal management (ICM) policies and frameworks development, civil society engagement and management of marine protected areas (MPAs). Parallel to these frameworks, five cross-cutting issues are also considered: knowledge management and communications, responding to climate change, community resilience, gender equality and private sector partnership. The current project will contribute towards many of the strategic actions in the NSAP. MFF Phase 3 2014-2018 has received initial funding of $4 million from the Government of Norway.

Through its 2013-2015 programme, **UNDP** support extends to three areas: (i) Effective local governance for sustainable, inclusive community development; (ii) Climate change, environment and disaster risk reduction; and (iii) Democratic governance. UNDP supported initiatives include community-based reforestation and sustainable forest management, watershed management, development of community-based resource- and land-use planning systems, sustainable agricultural and livelihood development programmes and local conservation programmes. In addition, in November 2011, Myanmar became a **UN-REDD** Programme partner country and has developed the Myanmar REDD+ Readiness Roadmap. Based on the roadmap, with US$4,788,250 funding, UN-REDD programme is providing targeted support for 4 years from 2015 to engage stakeholders and develop capacity to implement a participatory governance arrangement for REDD+. **UNDP/UNEP joint programme Poverty and Environment Initiative (PEI)** support the government in improving the quality of foreign direct investment in natural resource sectors by managing the social and environmental impacts. The current programme budget is US$700,000 for 2014-2017. See **Annexes 15 and 16** (baseline reports on marine resources and seascapes, and terrestrial resources and landscapes respectively) for further information on baseline activities.

Although the baseline activities are significant, the threats to the globally significant biodiversity of Tanintharyi Region are on the increase and biodiversity is in decline. Key gaps in the baseline include the failure to deal with illegal and unsustainable inshore and offshore fishing practices, limited support towards the development of new protected areas embracing under-represented marine, coastal and terrestrial forest habitats, the need for capacity development of the regional government for assessing the environmental impacts of development policies, programmes and projects, and integrated natural resource management that takes account of economic valuation of ecosystem services and biodiversity. Overall, the support provided in the fields of biodiversity conservation and ecosystem management has generally been small scale and rather fragmented, focusing on addressing specific threats and issues. A more comprehensive approach that combines work to improve response to systemic issues at the national, provincial levels, and interventions on the ground level to apply systemic improvement is warranted in this recently opened country.

Annex 23:

Seascape Indicators 2014-2016

-See separated file-