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Advisory review on the IEE/ESIA for the Passenger Transport Chindwin River

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Advice of the Secretariat

Title	**Advisory review on the IEE/ESIA for the Passenger Transport Chindwin River, Myanmar**
To	Netherlands Enterprise Agency (RVO)
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Date	1 October 2020
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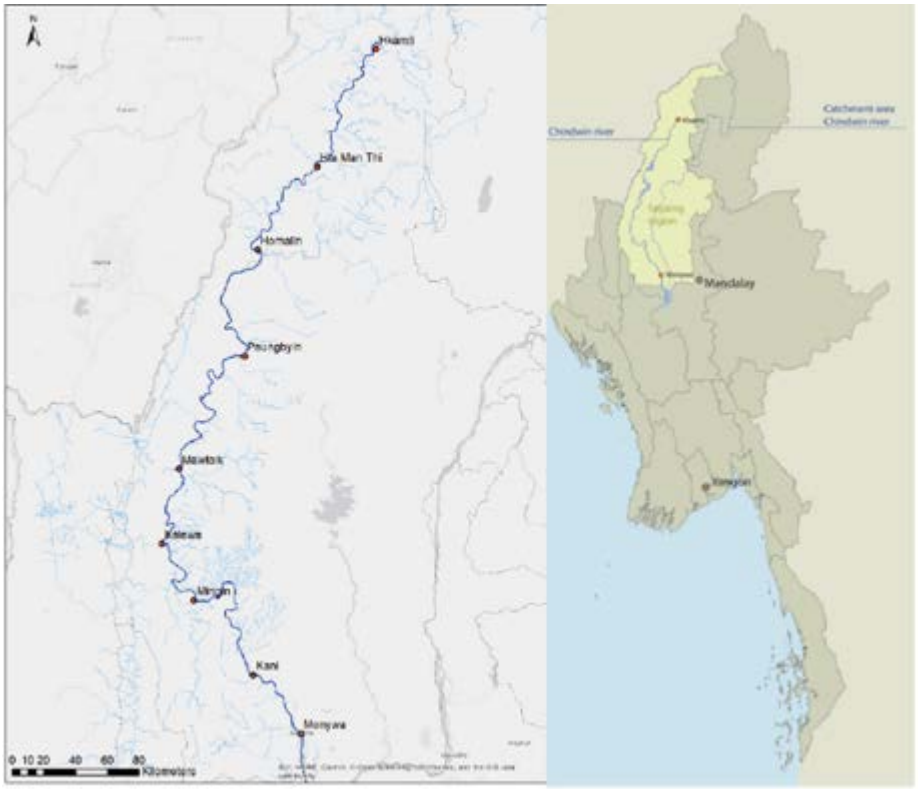
List of Acronyms

CSO:	Civil Society Organisation
DACU:	Development Assistance Coordination Unit
DMA:	Department of Marine Administration
DRIVE:	Development Related Infrastructure Investment Vehicle
DWIR:	Directorate of Water Resources and Improvement of River Systems
ECD:	Environmental Conservation Department
ESIA:	Environmental and Social Impact Assessment
ESMP:	Environmental and Social Management Plan
EHS:	World Bank Group Environmental Health Safety Guidelines
FRP:	Fibre Reinforced Plastic
GoM:	Government of Myanmar
IACS:	International Association of Classification Societies
IEE:	Initial Environmental Examination
IFC PS:	International Finance Corporation Performance Standards
IMO:	International Maritime Organisation
IWT:	Inland Water Transport
LRP:	Livelihood Restoration Plan
MoTC:	Ministry of Transport and Communication
NCEA:	Netherlands Commission for Environmental Assessment
RAP:	Resettlement Action Plan
RHDHV:	Royal HaskoningDHV
RVO:	Netherlands Enterprise Agency
SEP:	Stakeholder Engagement Plan
ToR:	Terms of Reference

1. Introduction

The Chindwin River is the largest tributary of the Ayeyarwady and it has long been an important mode of transport in the Sagaing Region in Myanmar. There are currently some challenges being faced in river transportation. In the past few years, deadly disasters have occurred with several private sector operated vessels. The naturally high sediment load of the Chindwin River has further increased due to deforestation and mining activities. As a result, various sections along the Chindwin River navigation route have become very shallow in the dry season, posing a constraint to the Inland Water Transport (IWT) to operate their boats in the dry season[1]. IWT is a state-owned enterprise under the Ministry of Transport and Communications (MoTC) and is responsible for passenger and cargo river transportation in Myanmar.

IWT ('the proponent') is currently preparing a project called 'Passenger Transport Chindwin River' in Myanmar (from now on 'the project') with the aim to develop year-round safe and reliable river transport. The project is located in the Sagaing Region and runs 700 km along Chindwin River's bed, from Hkamti in the North, to Monywa in the South near the confluence with the Ayeyarwady River. The project is meant to replace IWT's present ferry service with a new intercity ferry service, and to connect the towns Monywa, Kani, Mingin, Kalewa, Mawlaik, Paungbyin, Homalin, Hta Man Thi and Hkamti.



Source: Draft Initial Environmental Examination Report Passenger Transport Chindwin River, 22 July

[1] It is unclear to what degree private sector operated boats face the same problem. In the scoping report (Annex C minutes of a meeting with the IWT) it is stated that the private sector makes use of smaller boats that run all seasons.

The proposed components of the project are:

1. **The construction, operation and maintenance of 9 jetties**. The preferred design consists of a steel pontoon and a flexible bridge located at IWT's nine existing landing sites.
2. **Constructing, operation and maintenance of 9 catamaran ferries** made from Fibre-reinforced plastic (FRP) with the following specifications: 24-meter long, 7 meters beam, 1-meter draught, maximum speed at 15 knots and capacity of 120 passengers. For the purchase of the ferries, the Government of Myanmar (GoM) will acquire a loan of 15 million euros.
3. **Upgrading IWT's Monywa Shipyard** to be able to maintain the new ferries**.** The assembly and maintenance of the 9 ferries will be done at the IWT Dala Shipyard in Yangon. Small repairs will be carried out at the Monywa Shipyard.
4. **Annual hotspot dredging**[2] at shallow parts of the Chindwin river in the dry season.

The project is currently in the development phase and receives support from the Netherlands Enterprise Agency (RVO) under its Develop2Build facility. Once approved, the RVO intends to finance the construction of the landing sites for the ferries and the upgrade of the Monywa Shipyard under its DRIVE facility. Dredging activities will not be part of the scope of the DRIVE project and will be executed by the Myanmar's Directorate of Water Resources and Improvement of River Systems (DWIR).

RVO classified the proposed project as 'Category A', for which an elaborate Environmental and Social Impact Assessment (ESIA) needs to be carried out. In May 2020, the Environmental Conservation Department (ECD) informed the proponent that they require an Initial Environmental Examination (IEE) for the proposed initiative. The approval of this IEE by the ECD is necessary to obtain an Environmental Compliance Certificate. A team of consultants from Royal HaskoningDHV and Environment (Wuynkin) Myanmar Cooperative Ltd. (EMC) carried out a study and delivered a scoping and a draft IEE/ESIA report. Because they are considered to be a crucial component for the project to succeed, dredging activities are included in the scope of the IEE/ESIA.

The scoping report delivered by the aforementioned team of consultants (February 2020) has been, upon RVO's request, reviewed and advised upon by the Netherlands Commission for Environmental Assessment (NCEA)[3]. The RVO requested the NCEA to also review the draft IEE/ESIA of 22nd July 2020, which is the focus of this document. The NCEA's advice will be used to inform RVO's go-no-go decision on the project (which was planned on the 26th of August) and on determining the further steps that need to be undertaken on the ESIA/ESMP.

In addition, because the project involves the acquiring of a loan by the government, there is need to get approval from the Development Assistance Coordination Unit (DACU) and Myanmar's Parliament, as per local requirements. The DACU has already approved the project, but it still has to be passed by Parliament.

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[2] Hotspot dredging involves the periodic removal of (generally smaller amounts of) sediments and shoals from specific points in existing navigation channels, berths and so on; in contrast to capital dredging, which refers to the removal of (generally larger amounts of) previously undisturbed sediment or rock layers to widen or deepen navigation channels.

[3] See advice of 26 June 2020 https://www.eia.nl/docs/os/i72/i7273/7273_final_advice_scoping_advice_chindwin_river_transport_-_26-6-2020.pdf

1.1 The NCEA's approach

To carry out the review of the IEE/ESIA, the NCEA assembled a working group of experts covering the fields of marine ecology and dredging, biodiversity, river transportation safety, socio-economic impacts and river morphology. The NCEA's review concentrated on the draft IEE/ESIA report of 22nd July 2020. Due to the travel restrictions related to COVID-19, the working group was not able to visit the project location. The findings and recommendations in this advice are hence only based on what has been recorded in the draft IEE/ESIA report of July 2020. The working group reviewed the scoping report and the IEE/ESIA report with reference to the following benchmarks:

- The Myanmar EIA Procedure (2015)
- The International Finance Corporation Performance Standards (IFC PS)
- World Bank Group Environmental Health and Safety Guidelines (EHS) including:
  - General EHS Guidelines (2007)
  - EHS Ports, Harbors and Terminals (2017)
  - EHS Shipping (2007)
- Other relevant international standards used include:
  - International Maritime Organisation (IMO) International Convention for Safety of Life at Sea (SOLAS) 1974 as amended
  - International Maritime Organisation International Code for Application of Fire Test Procedures, 2012
  - EU Directive 2009/45/EC of 6-5-2009 on Safety rules and standards of passenger ships

As a principle, the NCEA always strives to link up with the local environmental authority, so that both institutions can exchange information and experience during their respective reviews. However, despite existing and cordial working relations between the two institutions, the NCEA did not connect with ECD for exchange purposes. First reason is that the draft IEE/ESIA report has not yet been formally submitted to local authorities, as this will happen only after RVO concludes that the draft report is of sufficient quality. The second and a more important reason is that the ECD has informed the NCEA that they prefer to keep their review task free from any external influence.

The following chapter (Chapter 2) first gives an overview of key findings and conclusions. This is a summary of the main positive findings and the essential shortcomings the NCEA encountered in the draft IEE/ESIA. In Chapter 3, the essential shortcomings of the draft IEE/ESIA are elaborated, with reference to IFC PS where relevant. Essential shortcomings refer to issues that, according to the NCEA, need to be addressed before the ESIA can be approved. In Chapter 4, several *additional and detailed points of attention* in relation to IFC PS are outlined, which have not yet been touched upon in the earlier chapters, but which still require further attention in the further steps of the IEE/ESIA and project implementation.

2. Summary of main findings and conclusions

Positive findings

- The NCEA observes that several of her earlier recommendations to the scoping report have been followed up adequately:
  - Critical, natural and modified habitats have been identified as required by IFC PS.
  - The upper stretch of the Chindwin river between Hkamti and Hta Man Thi is classified as critical habitat and as no-dredging zone. In light of the important ecological values in this area and the high level of uncertainty about the ability to avoid/mitigate negative impacts, the NCEA acknowledges this conclusion and encourages to follow up on the consequences.
  - Nesting water birds along the riverbank have been included in the analysis.
  - An elaborate section with relevant conclusions on reptiles is provided.
  - The preferred material for the pontoon jetty has been amended from FRP to steel, based on environmental and social considerations.
  - The earlier proposal to carry additional fuel onboard the ferry as cargo along with passengers has been dropped based on environmental/social/safety considerations among other things.
- The proposed use of a dynamic navigation system is an interesting addition. Optimizing the navigation route could be a useful measure to reduce dredging volumes and improve safety.
- It is laudable that the IEE/ESIA team managed to collect additional information from community and institutional stakeholders, despite the challenging Covid-19 circumstances.
- The report mentions various benefit-sharing opportunities with stakeholders, for example private sector ferry operators (safe fuelling system, improved jetty access, improved river navigability as a result of hotspot dredging) and food and beverage suppliers/vendors (supply to IWT passengers prior to embarkation). Realisation of these opportunities will require strong IWT commitment and coordination with these stakeholders.
- During the scoping stage, the NCEA raised some questions on the potential impacts of dredging on river morphology. Based on a critical review of the draft IEE/ESIA and the dredging study by an additional expert, the NCEA concludes that there are no essential shortcomings in relation to river morphology. These documents depict a fair assessment of the effects related to sediment transport and river morphology and draw right conclusions. The NCEA confirms in particular that:
  - Based on a 200 to 300 meter wide river (and 20.4 meter dredging), it is realistic to expect that dredging, mostly under water, will not have significant effects on the area of the sandbars, which are vital habitats for turtles and birds. There is no risk that bed topography modification (due to hotspot dredging) will trigger a morphodynamic response, which could in turn cause further erosion of bars. Rather, as noted in the IEE/ESIA, the result will be temporary and erased with high waters of the next wet season (Section 6.2.3.6).
  - The dredging study and plan take into account, at least to a certain degree, potential impacts on the ecology (e.g. a focus on turbidity and dredging plumes).
  - Although concerns related to river morphology continue to exist, these do not relate to, or have direct consequences for the proposed hotspot dredging in the Chindwin River.

Essential shortcomings

In addition to these positive comments, the NCEA observes the following shortcomings:

- The information and analysis on the comparison of ferry design is not adequate to justify the preferred ferry type from an environmental and social perspective.
- Biodiversity values between Homalin and Hta Man Thi have been partly recognised but not sufficiently investigated, nor followed up to ensure its protection.
- The IEE/ESIA does not provide a clear section or table that highlights the number and locations of project affected people who are potentially at risk of economic displacement.
- The Stakeholder Engagement Plan (SEP) has not yet been formulated and no outline is given for the grievance mechanism. Also, the Environmental and Social Management Plan (ESMP) is too generic. These are all not yet in compliance with IFC PS.
- The institutional gaps and the conditions required for effective management of environmental and social impacts and risks have not been adequately highlighted or addressed:
  - It is unclear what standards will be adhered to, in the design, operation, maintenance and decommissioning of the ferries.
  - The current safety management system has not been analysed and no outline is given for how safety management will be organised and secured in the proposed project.
  - The limited capacity among key implementing institutions to manage the project in an environmentally and socially responsible manner is highlighted, but not addressed.
- The draft IEE/ESIA report does not yet present the collected information a way that is appropriate to inform stakeholders on the justification of key choices, the main impacts/risks and how these will be avoided or mitigated and by whom.

Main Conclusion and Recommendations

The essential shortcomings outlined above imply that the draft IEE/ESIA is not yet adequate to enable informed and sound decision making on the proposed project. The NCEA advises that the essential shortcomings in the draft IEE/ESIA are addressed, before it is presented to decision makers and stakeholders.

1. Improve the comparison of the ferry design alternatives and the justification of the preferred ferry type.
2. Recognise and protect biodiversity values between Homalin and Hta Man Thi and classify this river section as critical habitat.
3. Provide a detailed overview and analysis of project-affected people and propose concrete, actionable measures to avoid/mitigate impacts.
4. Deliver an elaborate SEP, a grievance mechanism and a more elaborate ESMP.
5. Provide concrete recommendations for creating (timely) the necessary institutional conditions for the appropriate management of environmental, social and safety risks.
6. Present the information in the ESIA in a way that is easy to follow and appropriate to inform stakeholders on the justification of key choices, main impacts and mitigation.

3. Elaboration of essential shortcomings

3.1 Justification of the preferred ferry type

In section 4.5.2 (p. 58-61), three alternatives have been considered: upgrading existing ferries, steel hull ferries and Fibre-Reinforced Plastic (FRP) ferries. The information and analysis presented in this section is not adequate to justify the selection of FRP ferries from an environmental and social perspective due to the following:

- The alternative of a new (upgraded) version of existing ferries (equipped with essential life- saving appliances) has not been explored/elaborated. Against the background of the significant overcapacity (especially in the dry season), the analysis of this alternative would provide useful insight in the need for / added value of purchasing nine new ferries.
- Neither all available types of ferries, nor all relevant and interrelated particulars of the ferries have been taken into consideration.
- The determination of fuel consumption between the alternative designs (and therewith the assumed cost reductions) is not clear because engine particulars are not provided.
- The desired operating speed (15 knots), the maximum draught level (1m) and passenger capacity (120 are presented). The desired design lifetime appears to correspond to the operational period until 2035 (p. 53) but needs to be confirmed.
- The steel-hull and the FRP ferries are not compared in a systematic way, since the basic principle that when one variable is being evaluated, the others need to be held constant, is currently not adhered to. This makes it hard to comprehend the presented comparison.
- In its advice on the scoping report, the NCEA highlighted that FRP ferries warrant serious concerns for safety due to their vulnerability to fire, collision and grounding. Section 4.5.2 of the draft IEE/ESIA concludes that FRP ferries are the preferred alternative because '*they are value for money'* and '*RVO experts confirmed that FRP is suitable to the conditions in the Chindwin River'*. The latter statement is not substantiated from an environmental/social/safety perspective, as one would expect in an ESIA.

Recommendations

Section 4.5.2 (p. 58-61) of the IEE/ESIA on alternative ferry designs needs to be replaced by a more complete assessment and additional information.

- Consider relevant and available ferry types and present the interrelated variables of the alternative designs for a proper assessment:
  - Desired design particulars (including *maximum draught, passenger capacity, design life and operation speed*).
  - *Hull and superstructure material* which determines tonnage and engine power required. Other than all-steel and all-FRP ferries, other available options include all aluminum ferries and a combination of these materials for the hull and superstructure.
  - *Engine power* corresponding to the desired operating speed of 15 knots, which links to tonnage, which in turns depends on the selected hull and superstructure.
  - *Fuel consumption per roundtrip,* which depends on the choice/specification of the engine.
- Compare the various design options for hull and superstructure material of ferries, in respect of each of the aforesaid variables. In making this comparison, the basic principle

that when one variable is being evaluated, others need to be held constant, should be adhered to. Analyse how the design alternatives perform on relevant environmental and social considerations including:

- safety risks related to collision, grounding and overloading. In this analysis, incident statistics and multiple examples from past serious accidents should be taken into account;
- GHG emissions per roundtrip;
- costs related to managing safety and environmental risks and impacts during operation, maintenance and decommissioning phase and cost of disposal / recycling;
- institutional and operational capacity related to approving the design and monitoring the construction, operations and maintenance;
- potential social benefits (such as employment).

- Present a clear summary and a table of the design alternatives. Justify, against the comparison of social and environmental considerations, which ferry type is preferred.

3.2 Biodiversity values between Homalin – Hta Man Thi

The NCEA recognises that a great effort has been expended to collect biodiversity information. This has resulted in a comprehensive overview that reveals the high biodiversity value and sensitivity of the project area. However, there is still a need to draw conclusions on potential impacts, and to present a thorough follow up on the presented data and findings. This has been done correctly and convincingly for the Upper Chindwin and for the Burmese roofed turtle. The Upper Chindwin (the river section between Hta Man Thi – Hkamti) has been classified as a *critical habitat* and *no-dredging zone* and for the Burmese roofed Turtle appropriate protection measures have been proposed. However, a similar analysis and recommendations have not been provided for other river sections and important species. The NCEA would like to draw special attention to the river section between Homalin and Hta Man Thi**,** which has a biodiversity value and sensitivity that is similar to the Upper Chindwin.

- The NCEA is of the opinion that the conclusion drawn for the Upper Chindwin, should also apply to the river section between Homalin and Hta Man Thi because:
  - The section Homalin – Hta Man Thi is located in a Key Biodiversity Area (KBA) that is protected and the area hosts four globally threatened freshwater turtles and three near threatened water birds (see last paragraph of Annex 4.1). The report mentions the presence of rare and globally protected mammal species that regularly access the river from the neighboring wildlife sanctuary. All this information should raise high alertness on the need for further investigation.
  - There is mention of various endemic fish species (section 5.6.5.2 p.105) which also still requires further investigation, and reference to the occurrence of River tern (near threatened)[4] with highest densities being observed between Homalin and Hkamti.
  - The presence of endemic and endangered species implies that the section between Homalin and Hkamti classifies as critical habitat as per IFC PS 6[5]. The species occurring in this river section will be equally sensitive to dredging and sudden changes in flow or

[4] The River tern is strongly declining within most of its range and currently considered to be upgraded and the Red List authority for birds, BirdLife International has recommended on 24 July 2020 after a long consultation to IUCN that the species should be upgraded to vulnerable (VU).

[5] As at current, the ESIA classifies the river stretch between Homalin and Hkamti as natural habitat.

increased turbidity. Moreover, also in this area no dredging has been carried out yet. After dredging, access to and traffic in the area in the dry season will likely grow and increase disturbance to the already fragile biodiversity. This potential (indirect) impact is mentioned in the IEE/ESIA, but the implications are not further elaborated. Neither is it discussed how the potential impacts on biodiversity should be considered against the little number of passengers that are reported to take the boat between Homalin and Hkamti (10 people as reported in page 189).

- The draft IEE/ESIA recognises that IFC PS 6 requires a no-net loss and adaptive management to conserve biodiversity in natural habitats. It appears that the draft framework for dredging plans (section 8.5.5.4) is a way to comply with this requirement. The mentioned framework suggests that, in natural habitats, DWIR and TSA shall collaborate in monitoring the 'species in survey' and identify disposal locations. This framework could indeed be a key mitigation measure for biodiversity but requires further specification in order to become operational. It is for instance not clear whether the hotspot locations will be surveyed for flora and fauna yearly, which species from the survey will be monitored and how, which mitigation measures will be implemented, or what arrangements have been made with DWIR and TSA to implement this framework.

Recommendations

- As a precautionary principle, it should be given serious consideration to classify preferably the entire river stretch between Homalin and Hkamti as critical habitat and as a no-dredging zone, and to take this up in the framework for the dredging plan for DWIR.
- Carry out detailed investigations on habitats such as nesting, roosting and wintering sites of endemic or endangered fish, turtles and water birds.
- Take further action to clarify and operationalise the framework for the dredging plans in the remaining river stretch:
  - be clear about the prioritised species for monitoring;
  - establish a baseline to monitor 'no-net loss' and define measures to implement when these species' numbers do decline;
  - specify activities related to monitoring (when, how often where');
  - include the yearly survey to flora and fauna of bottleneck areas;
  - specify/include clearly the mitigation measures for impacts of dredging and disposal;
  - define criteria and a protocol for dealing with data from surveys and monitoring and for identifying disposal locations;
  - identify and train a local/national biodiversity monitoring team that monitors compliance with agreed standards;
  - Ensure and establish clear institutional and financial arrangements between DWIR and TSA for collaboration on dredging plans .

3.3 Project-Affected People at risk of displacement

The ESIA does not provide a clear section or table that highlights the number and location of project-affected people (PAPs) that are at potential risk of economic displacement, and what the proposed measures to avoid/mitigate/compensate and policy commitments from IWT will entail. Information on people that may potentially be impacted is currently scattered throughout the report and annexes:

- 230 vendors at 9 ferry landing sites, and 85 small restaurants and shops near the ferry landing sites (section 9.3 results of consultations).
- An unknown number of small-scale fishermen (different from the regulated leasehold fishermen). The IEE/ESIA suggests this could involve quite a significant number of people but no figures are provided. This issue is also not clearly/sufficiently addressed in the dredging framework for DWIR (section 8.5.5.7, p.177).
- Annex A6 indicates that at the Monywa landing site, there are two old ships that house 'illegal settlers'. The IEE/ESIA report or the ESMP table (Annex 10) does not include any information on these potentially affected people, including whether these ships will be moved for the new jetty landing sites and if/how eviction of these people can be prevented.
- The consultation results (section 9.3, p194) indicate that in Monywa there are informal settlers (16 families) living at the ferry landing site in the dry season. It is stated that they will not be affected by the new jetty, but the ESIA/ESMP does not make clear how this will be done and/or what mitigation measures are proposed.
- Similarly, Annex A2 indicates that there are 16 families living in the workers quarters at the Monywa Shipyard. However, there is no information whether these quarters will be affected by the proposed upgrading of Monywa Shipyard and/or what mitigation/compensation measures will be put in place.

The lack of a detailed analysis of project impacts on these groups of people poses the risk of underestimating potentially significant social impacts. If left unaddressed, this may cause economic (or even physical) displacement and create tension/conflict with the people affected.

Recommendations

- Provide a detailed overview of the number of project-affected people, disaggregated by type, scale and specific location of impact.
- Outline specific mitigation and/or compensation measures to avoid and mitigate these impacts in the ESMP for each of the affected group of people. Make sure that measures related to fishermen are incorporated into DWIR's framework for dredging.
- Include a section with key policy principles (based on IFC PS) that IWT and relevant contractors should commit themselves to as a condition for project financing, e.g. avoidance and minimisation of physical and economic displacement, no forced eviction, compensation of assets at replacement cost, and livelihood restoration support.

3.4 Stakeholder Engagement and grievance mechanism

The Stakeholder Engagement Plan (SEP) in the ESIA does not constitute a substantive plan for future stakeholder engagement in a way that is compliant with IFC PS.

- The SEP presented in the ESMP in chapter 8 is only a table of contents and not a plan.
- The SEP presented as part of Public Consultation and Disclosure in chapter 9 points out some good intentions for stakeholder engagement, but it does not provide a detailed plan for future engagement.
- A stakeholder identification and mapping are presented (tables 9-1and 9-2), but there is no specific mention / disaggregation of vulnerable groups.

- The stakeholder identification table (9-1) had also been presented previously in the scoping report and remains unclear due to the confusion between 'directly affected' and 'institutional stakeholders'. The general community, village head and elders are classified as institutional stakeholders, while IWT appears as a subcategory of the community, which is incorrect.
- The stakeholder mapping table (9-2) from the scoping report has not been updated based on most recent consultations (e.g. still mentions 'resettlement impacts' and 'fuel storage on jetties' and fails to mention the 'illegal settlers' in old ships and 16 families living at Monywa landing site as indicated above).
- The need for a grievance mechanism is mentioned, without providing any further details.

Recommendations

- Elaborate, as part of the ESMP in chapter 8, a stand-alone SEP section that includes a) an updated stakeholder identification and mapping (from what is now chapter 9) and categorizing stakeholder groups in table 9-1 differently, and b) a detailed overview of the type, audience, process, schedule and responsibilities for future information disclosure and engagement activities. It is of particular relevance that:
  - vulnerable groups are disaggregated and paid specific attention to;
  - the SEP outlines how factors that complicate stakeholder engagement will be dealt with, such as the large and varied project area (700 km river stretch) and the unpredictability of locations and numbers of fishermen that could be impacted by dredging;
  - clear arrangements are made between IWT and DWIR for stakeholder engagement in dredging activities;
- Under the SEP, include at least a basic outline of the community grievance process and specify grievance mechanism access points (including contact number and locations) and management responsibilities.

3.5 Institutional conditions to manage environmental and social impacts

While noting that a few of the NCEA's earlier recommendations have been captured, the institutional conditions required for an effective management of environmental and social impacts and risks still require due attention:

Existing gaps in the legal framework imply the risk that the project will operate in a legal vacuum. This issue has not been addressed:

- It is not explained to what extent the draft National Construction Standard for Shallow Water Vessels will be applicable to vessels of FRP hull and superstructure. Neither does the draft IEE/ESIA propose alternatives for regulatory compliance, in case the draft Standards are not adopted.
- It is unclear which standards will apply for competency, training, certification of the crew[6] and the applicability of the Occupational Health and Safety Law 2017 is not elaborated. It is also not stated whether the proposed ferry (design) is operating in certain jurisdictions and the Classification Society Rules / notation applied to the ferries.

[6] The Myanmar Merchant Shipping Act, 1923 does not apply to masters of domestic ferries (p. 18).

Recommendations

- Address potential/existing gaps in the legal frameworks by clarifying which standards will be adhered to, to design, construct, operate, maintain and decommission the ferries[7].
- Consider the adoption of the National Construction Standard for Shallow Water Vessels as a mandatory pre-construction phase project activity.
- Otherwise, propose alternative standards that have been adopted by the International Maritime Organisation (IMO), or relevant rules of a member society of the International Association of Classification Societies (IACS), in the event of non-adoption of the national standard or its non-applicability.
- Elaborate on the applicability of the Occupational Health and Safety law 2017.
- Examine and propose options to overcome legal deficiencies for standards of competency training and certification of the crew, to ensure minimum safety standards.

The current safety management system and capacities have not been analysed, nor is it explained how safety will be managed in the proposed project.

- An organogram of the MoTC/Department of Marine Administration (DMA) and the number of surveyors is not provided.
- The project description does not include activities critical to ensuring safety.
- The organisation and the different roles and responsibilities for safety management are not outlined. It is for instance not clear what DWIR's responsibility for aids to navigation (p.10) entails.

Recommendations

The NCEA's earlier recommendations on safety management (see scoping advice section 3.2, p. 13) are still entirely valid and several points are reiterated below:

- Analyse the current safety management and bring insight in the adequacy of its functioning, performance, resource capacity and areas for capacity development. Include in the IEE/ESIA an organogram of the MoTC and its Department of Marine administration and specify the number of surveyors.
- Explain how safety management will be organised in the project and specify roles and responsibilities. Include in the project description an overview of activities that will be undertaken for safety management and clarify who will undertake the following activities:
  - Flag state surveys and inspection of the vessels
  - Training activities of ship, jetty staff and Shipyard personnel
  - Emergency drills - ship, jetty staff, and Shipyard personnel
  - Installation and maintenance of the ferries, and aids to navigation (e.g. laying navigational buoys, lights and shapes, providing sounding charts).
  - Keeping the passage free of floating logs, including upstream from Homalin, which is imperative for navigational safety
  - Continued training of administration, crew and emergency responders

[7] A standard to consider for the recycling of ships is the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009.

The IEE/ESIA highlights the limited capacity among key implementing institutions (especially IWT and DWIR) for being able to meet the project objectives in an environmentally and socially responsible manner. At the same time, capacity development does not appear to be a priority in the project and is not clearly addressed and elaborated in the ESIA/ESMP:

- The nature and focus of RVO's Technical Assistance to IWT is not outlined. The IEE/ESIA does also not show a clear direction for what this assistance should entail.
- DWIR is stated to be considered as a 'third party' and no efforts are planned to support DWIR in fulfilling their responsibilities for the environmental and social management in this project. Technical and equipment support from the World Bank AIRBM project to DWIR is mentioned, but this remains an assumption that has not yet been investigated.
- The ESMP is quite generic and does not include specific provisions on responsibilities, timing, monitoring indicators and costs, which would normally be expected in an IFC compliant ESMP. It is neither clear to what degree the institutional stakeholders (table 3-6 p.22) are committed, or have the capacity to allocate budget and human resources to the tasks related to environmental and safety management and monitoring.

Recommendations

- Consider including capacity-building among key implementing partners (IWT and to certain extent DWIR and relevant monitoring institutions) as a key component of the project. Show in the ESIA/ESMP what efforts are needed to ensure that key institutions will be at the level required to meet environmental and social standards in 3-5 years, when responsibilities will be handed over from the contractor to the IWT.
- Include in the IEE/ESIA a section that outlines what such capacity-building should entail (for instance: technical assistance for the development of relevant policies and management plans, hiring of experienced local environmental and social staff, purchase of relevant equipment and training/accompaniment by (external) specialists, how to use such equipment and how to implement and monitor environmental and social safeguard measures).
- Specify the ESMP, by outlining the different responsibilities, timing, monitoring indicators and costs related to the outlined mitigation measures and monitoring. Indicate the capacity and commitment of the institutions involved.

3.6 Readability of the IEE/ESIA

As currently presented, the ESIA report is not always easy to follow and not yet appropriate to inform stakeholders because:

- The report is quite bulky, with some repetition, long descriptions and data that could be presented in a more succinct manner. Due to the long and scattered information, the report fails to give a clear picture of key issues. An overall concluding chapter is lacking where various findings throughout the text are summarised into overarching conclusions and recommendations.
- Particularly chapter 6 (the impact assessment) provides a dense narrative, structured according to the different project phases, which leaves the reader overwhelmed and somewhat confused as to what the main conclusions on severity and mitigation measures for each impact and phase are. It is left up to the reader to interpret the environmental, safety and social considerations and to draw conclusions.

- With regards to the IEE/ESIA overview depicting significance of impacts (Annex A10), the following improvements are needed:
  - The ESIA table (Annex A10) would normally be expected in the main body of an ESIA.
  - The findings and statements throughout the main body, need to be consistently taken up in the IEE/ESIA table. As at current, this table is incomplete because not all potential impacts/mitigation measures have been considered.
  - Rating the significance of various residual impacts appears to be based on assumptions and may therefore not present a realistic picture. Some examples:
    - In the operation phase (02) risks around stakeholder engagement are rated as 'moderate' and as 'minor' after mitigation (Stakeholder Engagement Plan). However, the effectiveness of this mitigation is still to be seen, as the SEP is not yet formulated and the capacity of IWT to manage this plan remains uncertain.
    - Impact on critical habitats is rated as of major significance, and as minor after mitigation. This is based on the assumption that DWIR will implement the dredging framework as developed in the IEE/ESIA. However, it is unclear (and even uncertain) to what degree DWIR will be committed to implementing the proposed mitigation measures and to collaborate with the TSA.
    - Under activity 01, safety of passengers and staff is rated as being a major positive impact. This assumes that conditions and institutional capacities for safety management will be in place and different institutions are willing to take up their roles. The IEE/ESIA does not give clarification on this.
- Minutes of stakeholder consultations have been included as Annexes. It is not always clear how the many informative comments and questions have been taken into account in the IEE/ESIA.

Recommendations

Deliver an improved IEE/ESIA by taking into consideration the following revisions:

- Present the information more concisely by focusing on the main issues, incorporating the ESIA table currently in Annex A10 in the main text and removing detailed information to Annexes.
- Include concluding sections/chapters with a summary of main findings and proposed follow up.
- Make sure that all relevant information contained in the main report on potential impacts and avoidance/mitigation measures is consistently presented in the ESIA Table (currently in Annex A10). This should include at least:
  - Impacts on natural and critical habitats (operational phase)
  - Impacts on livelihoods such as on fishermen, potential economic or physical resettlement (preparation phase and operational phase)
  - Risks passenger safety and damage to ferries from collision, grounding, sinking, fire and overloading (operational phase)
  - Impacts/risks and mitigation at the end of design life (decommissioning phase)
- Critically review in the ESIA table the conclusions on residual impacts and take into account and/or make explicit reference to risks on the capacities and conditions that should be put in place for these mitigation measures to be implemented effectively.

4. Additional comments related to IFC PS

Performance Standards: brief explanation and focus points	Remaining findings in the IEE/ESIA
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	
• Identify and assess social and environmental risks and impacts, both positive and negative, in the project's area of influence • Avoid, minimise, mitigate or compensate for adverse impacts on workers, communities and the environment • Establish environmental and social action plans defining desired outcomes and actions (including measurable targets, performance indicators, timelines and resources) to address identified impacts. Establish procedures to monitor and measure the effectiveness of the ESMMP • Identify and analyse relevant stakeholders and groups / people that may be (disproportionally) affected. Formulate a Stakeholder Engagement Plan to maintain a constructive relationship with communities • Disclose information to stakeholders in an accessible, easy to understand, transparent and culturally appropriate manner • Adopt differentiated mitigation measures for groups disproportionally affected • Establish grievance mechanisms and systems for ongoing reporting to affected communities	• As part of stakeholder engagement, ideally before holding public consultations, the project should develop non-technical, culturally appropriate information materials to be disseminated in locations that are easily accessible to project-affected people.
PS 2: Labour and Working Conditions	
• Fair treatment, non-discrimination, equal opportunity to workers • Protection of workers, provide good working conditions, promote safety and health, minimise hazards • Avoid use of forced labour of harmful child labour • Freedom of association and collective bargaining • Adoption and implementation of policy and procedures • Establish Grievance Mechanism for workers	

PS 3: Resource Efficiency and Pollution Prevention	
• Introduce measures to improve efficiency in water consumption, energy and other resources and material inputs. Integrate principles of cleaner production into project design. • Avoid, minimise, and clean up pollutants and hazardous/non-hazardous wastes through the use of good international practice and technologies (including EHS guidelines). When third parties are engaged, legitimate enterprises will be contracted recognised by regulatory agencies. • Address issues like water pollution, land contamination, handling of hazardous materials and disposal of industrial waste. • Reduce greenhouse gas emissions. Consider alternatives to reduce GHG emissions. If more than 25.000 tonnes of CO2 emissions per year are expected (by all project related activities) these emissions need to be quantified.	• Section 6.2.3.2 concludes that, based on conservative estimates, the CO_2 emissions of the proposed new FRP ferries would be nearly 10% higher than of the existing steel ferries, or around 1,000 tonnes in absolute terms. This impact should be taken on board on the comparison between steel-hull and FRP ferries. • In the decommissioning phase (pp. 54-55), the likely year in which the ferries/jetties will be due for decommissioning should be mentioned. As legislative framework for decommissioning (recycling) of the ferries, the use of Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 is suggested. • Review discharge overboard of grey/black water from vessel as IMO MARPOL regulations prohibit overboard discharges of sewage, garbage, etc. This could be a serious non-conformity.
PS 4: Community Health, Safety and Security	

• Identify, evaluate, avoiding or minimise risks and impacts on the health and safety of the local community during the project life-cycle including:
  o Risk of exposure to hazardous materials during delivery, use and disposal
  o Adverse impacts on ecosystem services
  o Exposure to water related and communicable diseases
• Design, construct, operate and decommission structural elements consistent with good international industry practice.
• In case of potential risks, formulate and coordinate with stakeholders (responsible agencies, affected communities) an Emergency Preparedness and Response Plans so they can fully understand the risks.
	• It is still unclear whether the ferries will be custom built or use an existing design.
	• The NCEA suggests that the IMO International Safety Management Code, 1993 is used to guide the safety audit (p. 170) of ferries.
	• The basis for stating that the vessel will be manned by a crew of six (p. 53) requires clarification. As per the norm, the determination and approval of safe manning of a vessel is a task. of the maritime administration and governed by the provisions of the IMO/ILO Maritime Labour Convention (MLC), 2006. A break-up of the proposed crew, example Master, Chief Mate, Chief Engineer, Boatswain, deck hand, etc. is also required.
	• Given the prolonged duration and overnight nature of the ferry voyage, all the crew may be required to be provided with suitable resting quarters. In this regard, IMO MLC 2006 would be relevant.

	• The Sub-Plans at section 8.5 (pp. 170-173) appear to have been drawn up for shore-based activities? In such case, the ferries would require a set of emergency response plans for various contingencies onboard including fire, search and rescue, oil spills, etc. and some of these may require to be integrated with the plans of relevant shore organisations.
PS 5: Land Acquisition and Involuntary Resettlement	
• Avoid or minimise physical and economic displacement (through alternative project designs). This also counts for associated facilities not funded by the proponent but which are essential the project's success. • Avoid or minimise adverse impacts from land acquisition and resettlement. Improve or restore the living condition and livelihoods of displaced persons when resettlement is unavoidable. • Formulate a Resettlement Action Plan and a Livelihood Restoration Plan through collaborative decision making (each with its on ESMPP). Decisions on resettlement and livelihood restoration should offer alternative options. • Ensure that resettlement activities are carefully planned and implemented with appropriate disclosure of information, consultation and informed participation of those affected. • Establish procedures to monitor and evaluate the implementation of the RAP/LRP and carry out an completion audit of the RAP upon its implementation.	• Informal settlers ('squatters') and small vendors are likely poor and vulnerable groups that require specific safeguard measures. • After avoiding and mitigation, in case any physical / economic displacement remains, a detailed Resettlement Action Plan (RAP) and/or a Livelihood Restoration Plan (LRP) is required. Livelihoods should be restored and any loss of assets should be compensated based on full replacement costs. This would require a separate Stakeholder Engagement Plan (as part of the RAP/LRP) for affected groups.
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	
• Covers protection and conservation of biodiversity in modified, natural and critical habitats. In critical habitats no project activities should be implemented unless no other viable alternatives are available or no adverse impacts on the critical habitat. • Both direct and indirect impacts from a project on biodiversity and ecosystems need to be evaluated – these impacts need to be avoided and mitigated. Competent professionals and experts need to be engaged in the impact assessments and assist in the mitigation hierarchy.	• Table 3.1, p.11 does not refer to the National Wetland Strategy from 2019, but is relevant for this project. • Annex A4.1 is unlabelled, not authored and unclear how the data/photographs and observations were obtained. • It is good to focus on threatened species but the assessment should go beyond these species only. For example, Small Pratincole is a bird that nests and rests in significant high numbers along the river.

• Proponents must adopt an adaptive management to ensure that mitigation measures are responsive to changing conditions. • In projects with significant biodiversity issues (e.g. sensitive habitats or endangered species), a Biodiversity Action Plan should be prepared (As part of ESIA and ESMP), with specific goals i.e. net gain for Critical Habitat and no net loss for 'Natural Habitat'.	• Annex A4.2 rates whether it is likely or unlikely that a certain species occurs in the project area. This list is incomplete and the rating in case of some mammals and birds could be questioned. • Note that p.106 on fish does not quote original references and Kottelat surveys in Indawgiy and Ayeyarwady are not listed[8]. It is likely that there are more endemic species in the area as reported / quoted by Naung (2019). • There is no reference made to a Biodiversity Action Plan.
PS 7: Indigenous Peoples	
• This PS refers to social groups with identities distinct from mainstream groups in national societies. It addresses the need to avoid or minimise impacts on indigenous peoples. • Sustainable and culturally appropriate development of benefits and opportunities • Free, Prior and Informed Consent (FPIC) in certain circumstances, and participative mapping of land and resources and assessments of impacts.	• The IEE/ESIA indicates the presence of different ethnic minority groups (Naga, Shan, Kachin), which in specific situations may be considered 'indigenous peoples' (IP). In case the traditional land (or water) of (IPs) is directly affected, FPIC may apply. As part of the construction and maintenance ESMP (CESMP) a site-specific screening for the existence and impacts on indigenous people is recommended.
PS 8: Cultural Heritage	
The objective is to protect cultural heritage from adverse impacts of project activities and promote the equitable sharing of its benefits. This PS calls for the: • Protection and preservation of cultural heritage. Including religious sites and historical artefacts. • Promotional of equitable sharing of cultural heritage benefits.	• The IEE/ESIA indicates the presence of 'whirlpools' in certain sections of the Chindwin river that are considered (intangible) cultural heritage where boatsmen regularly pay tribute. The CESMP should indicate that these sites should be avoided for dredging. If unavoidable, appropriate mitigation measures should be discussed with local boatsmen.

[8] Chindwin hosts more than 800 fish species and some are outlined in Zöckler & Kottelat (2017) SOBA 4.5 Biodiversity of the Ayeyarwady Basin. Updated in 2018. http://airbm.org/downloads/SOBA/SOBA%204.5_Biodiversity%20report_2017_F.pdf