Environmental and Social Impact Assessment (ESIA) Mapping Exercise

An oil and gas company is planning activities in a new exploration block within an inhabited coastal area. Any oil and gas concession will require:

- A production platform;
- A pipeline;
- A processing plant;
- Access roads; and
- A product pipeline to reach the market.

There are four concession block options. However, the area has considerable terrestrial and marine biodiversity and thriving socio-economic sectors (e.g. tourism), with high population densities along the coastline.

The following environmental and socio-economic features have been identified within the landscape/seascape.

Habitats

- Shrubland, which local communities use for grazing livestock
- Agricultural land
- Forest, seemingly undisturbed, covering a large portion of inland area
- Mangroves present along much of the coastal area
- Coral reefs situated near the coast
- Seagrass meadows close to the mangroves

Socio-economic features

- Marine and coastal protected areas
- Several Key Biodiversity Areas
- Several areas dedicated to tourism, an important source of income for locals
- Offshore commercial fishing areas
- Cities and existing port locations

Scrubland

Agricultural land

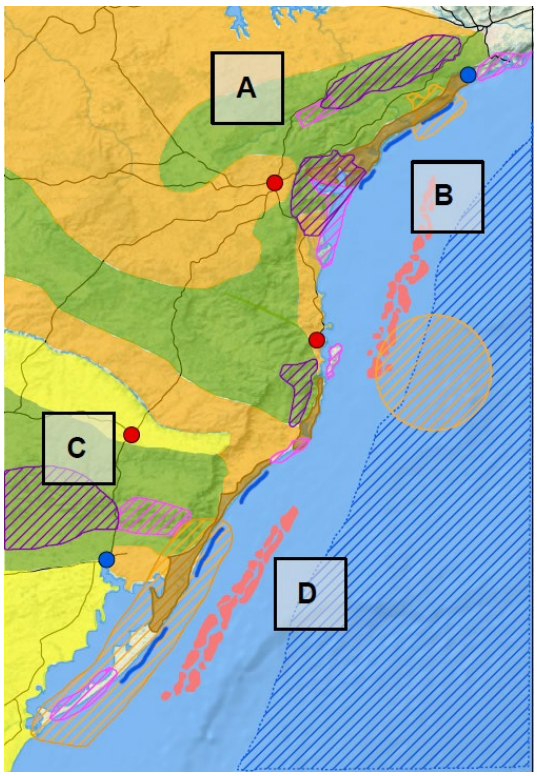
Forest

Mangroves

Coral reefs

Seagrasses

Proposed oil & gas exploration blocks



Exercise A: Concession block selection, screening, scoping and baseline assessment

Aims

- Understand the context of operations to be able to eliminate potential locations where adverse impacts could occur.
- Determine the priority biodiversity and ecosystem service features for further study.
- Identify the Area of Influence and specific surveys that will assist in establishing the existing biodiversity and ecosystem service status.

You will be working in groups for this exercise. Most of the exercise is carried out from the perspective of the oil and gas company looking to set up new exploration activities, apart from specific sections.

Part 1: Screening

1.1. Screening by the oil and gas company

The results of screening operations from geologists and engineers of the oil and gas company have come in. They have identified **three** potential locations for platforms within the proposed concession blocks and **four** potential locations for onshore processing plants. The following additional environmental and socio-economic features have been identified within the landscape/seascape.

Artisanal fishing

Beaches

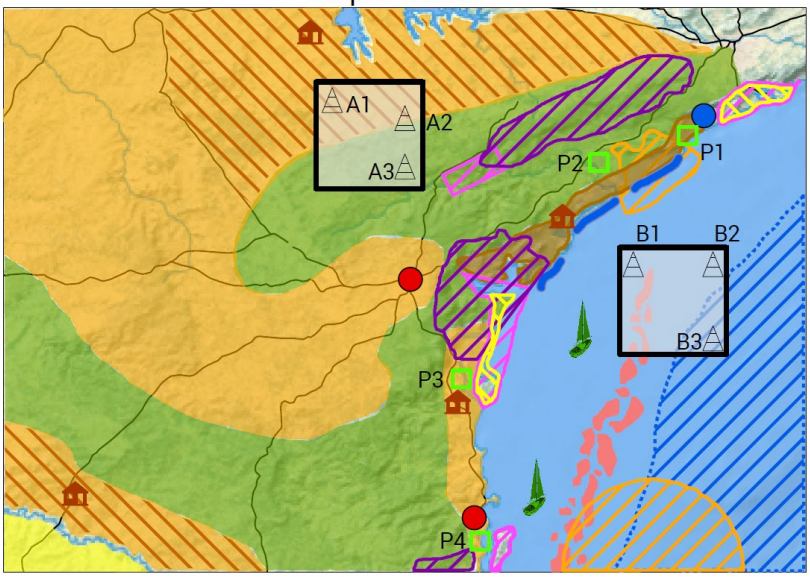
Subsistence agriculture

Villages

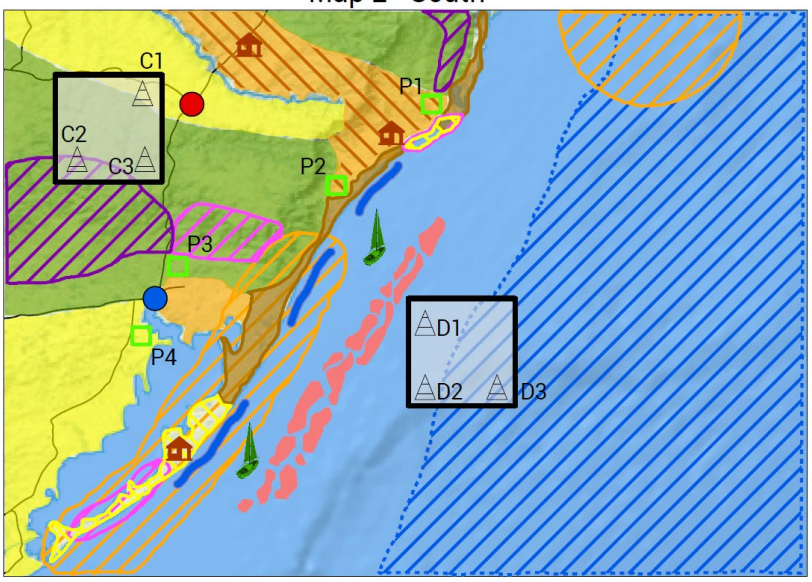
Potential drilling platforms

Processing plants

Map 2 - North



Map 2 - South



Legend

- Scrubland
- Agricultural land
- Subsistence agriculture
- Forest
- Mangroves
- Coral reefs
- Seagrasses
- Existing protected areas
- Existing Key Biodiversity Areas
- Proposed oil and gas exploration blocks
- Proposed processing plants
- Tourism areas
- Beaches
- Commercial fishing
- City
- Port
- Villages
- Artisanal fishing
- Roads
- Oil rig or platform

1. Which platform and processing plant locations might be screened out by the oil and gas company? Why?
2. Considering the sensitivities of different sites and the potential implications of operating in them, explain your reasons below. Use the table to cross out unsuitable options and tick the suitable option(s).

	Biodiversity and ecosystem services considerations		**Is this a potential option? ✓/×**
	Sensitivities	**Implications**	
	e.g. the site may impact nearby human settlements	*e.g. delays in operations due to stakeholder discontent over local disruption*	
Platform			
Processing plant			

1.2. Screening for the regulators

The oil and gas company must submit several documents so the project can be categorized as part of the official screening process. This includes a description and justification of the activity, its legal framework, and a short description of the environmental and socio-economic conditions of the area.

Based on the potential options selected in 1.1., what sensitivities would you expect to be included in the information provided to the regulators?

Part 2: Scoping and baseline assessment

2.1. Scoping by the oil and gas company

Screening was used to eliminate certain onshore sites and offshore platforms. Scoping will now identify the highest priority issues to study among those identified during screening.

For your chosen location:

1. List the biodiversity components and ecosystem services you identified in the screening exercise.
2. Note reasons for importance/prioritisation.
3. Identify what data are required to assess priority biodiversity components or ecosystem services, including in terms of their geographic scope and seasonality.

Biodiversity component or ecosystem service	**Reasons for importance/prioritisation**	**Type of data needed**
e.g. local subsistence fishery (provisioning services)	*e.g. fish is the only source of protein in this area*	*e.g. quantitative baseline fish population data covering the whole bay, with at least two repeats per year to capture seasonality*

2.2. Scoping by the regulators

An essential aspect of the regulatory scoping process for the oil and gas company is to identify the likelihood of flaws in its Environmental Pre-Viability Study (EPDA).

1. Based on the biodiversity components and ecosystem services identified in 2.1. and the likely impact of oil and gas operations, what are the potential flaws associated with this project?

Exercise B: Impact assessment, mitigation and monitoring

Aim:

- Understand the potential consequential impacts of going ahead with the project.
- Develop approaches to mitigate impacts upon biodiversity and ecosystem services and dependencies.
- Develop indicators to monitor the status of biodiversity and ecosystem services at the project site.

1.1. Mitigation of impacts upon biodiversity and ecosystem services

The baseline assessment has provided further information:

- Some areas of the map provide primary habitat for a migratory bird species listed as Critically Endangered on the IUCN Red List: the Madagascar pond-heron.
- Hawksbill turtles use parts of the undeveloped beaches as nesting sites. These sea turtles are listed as Critically Endangered on the IUCN Red List of Threatened Species.
- There is a whale migratory route offshore.
- As well as the undisturbed forest, some has been degraded by deforestation
- Some of the mangroves remain undisturbed, but others are experiencing pollutant/sediment load on the coast from nearby human activities, which are severely degrading the mangroves.

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Madagascar pond-heron

Hawksbill turtle nesting

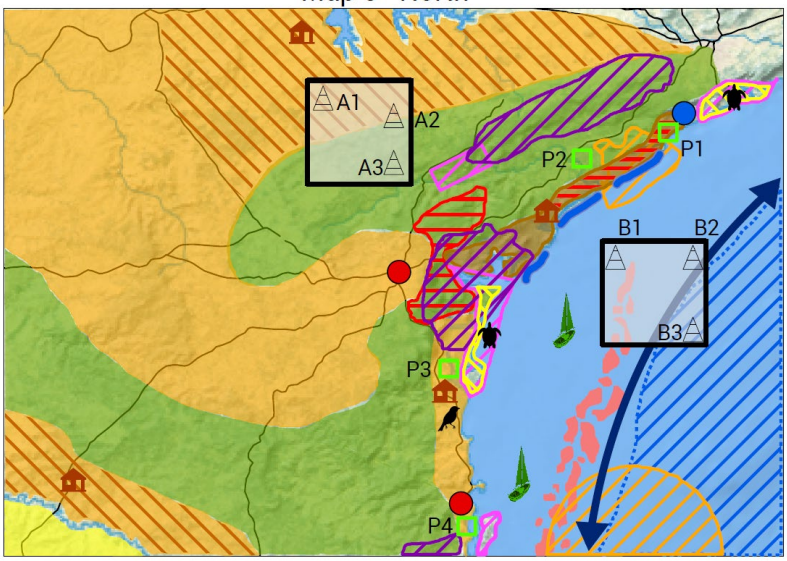
© Ian Locock

Whale migration route

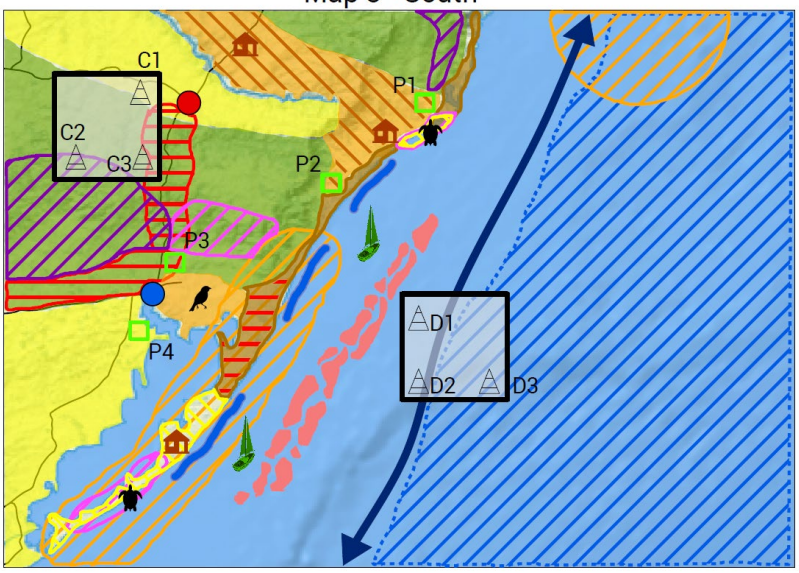
Degraded forest

Degraded mangrove

Map 3 - North



Map 3 - South



Legend

- Scrubland
- Agricultural land
- Subsistence agriculture
- Forest
- Mangroves
- Degraded habitat
- Coral reefs
- Seagrasses
- Existing protected areas
- Existing Key Biodiversity Areas
- Whale migration route
- Hawksbill turtles nesting (CR)
- Madagascar pond-heron (EN)
- Proposed oil and gas exploration blocks
- Proposed processing plants
- Tourism areas
- Beaches
- Commercial fishing
- City
- Port
- Villages
- Artisanal fishing
- Roads
- Oil rig or platform

Based on your chosen platform and processing plant locations and the biodiversity components prioritized during Exercise A:

1. Identify potential project impacts. In addition to the platform and plant themselves, also consider the pipeline from the platform to the plant and access roads.

2. For each of the identified impacts, outline what example measures from the mitigation hierarchy could be applied. Include at least one idea from each step of the mitigation hierarchy (avoid, minimise, restore, offset).

1.2. Monitoring of impacts on biodiversity and ecosystem services

As part of its ESIA report, the oil and gas company must include an environmental and social management plan that includes a monitoring plan. Based on your chosen platform and processing plant locations and the biodiversity components prioritized during Exercise A:

1. Think about which indicators might be useful to monitor the biodiversity components or ecosystem services, and the success of the mitigation measures.

Biodiversity component or ecosystem service	Description of key impacts and dependencies	Potential mitigation options	Indicators for monitoring
(using those identified in Exercise A)	*e.g.* ***Impacts*** *– Restricted access to fisheries and/or wild foods for local people, e.g.* ***Dependencies*** *– Access to food for workforce*	*(consider solutions that avoid, minimise, restore and offset impacts and dependencies)*	*(Consider: Specific, Measurable, Achievable, Relevant, and Timely (SMART) criteria)*