

Key commercial features and environmental and social consequences of the Cabo Delgado gas complex



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Introduction

The occurrence of hydrocarbons in Palma Bay has been known since colonial times. However, preliminary prospecting only began in 2006 (prior to the first concession round), with full-scale exploration after 2008. After Mozambique's findings of huge gas reserves in the mid-2000s, a major gas extraction and liquification plant (LNG) complex, the biggest ongoing investment project in Africa, have been in development in the Cabo Delgado region and the entire areas constitute a 4km broad sea belt along the Cabo Delgado coastline, from the border with Tanzania and southwards down to the boundary of Quirimbas conservation area, Encompassing islands such as Vamizi, Tecomaji and Rongui. Its potential significance for Mozambique in terms of both opportunities and perils has attracted much attention, particularly after 2017.

The paper sets out with an account of the commercial features, trajectory, and status of the gas complex; this is helpful in terms of understanding the actor dynamics and socio-environmental implications of the gas complex

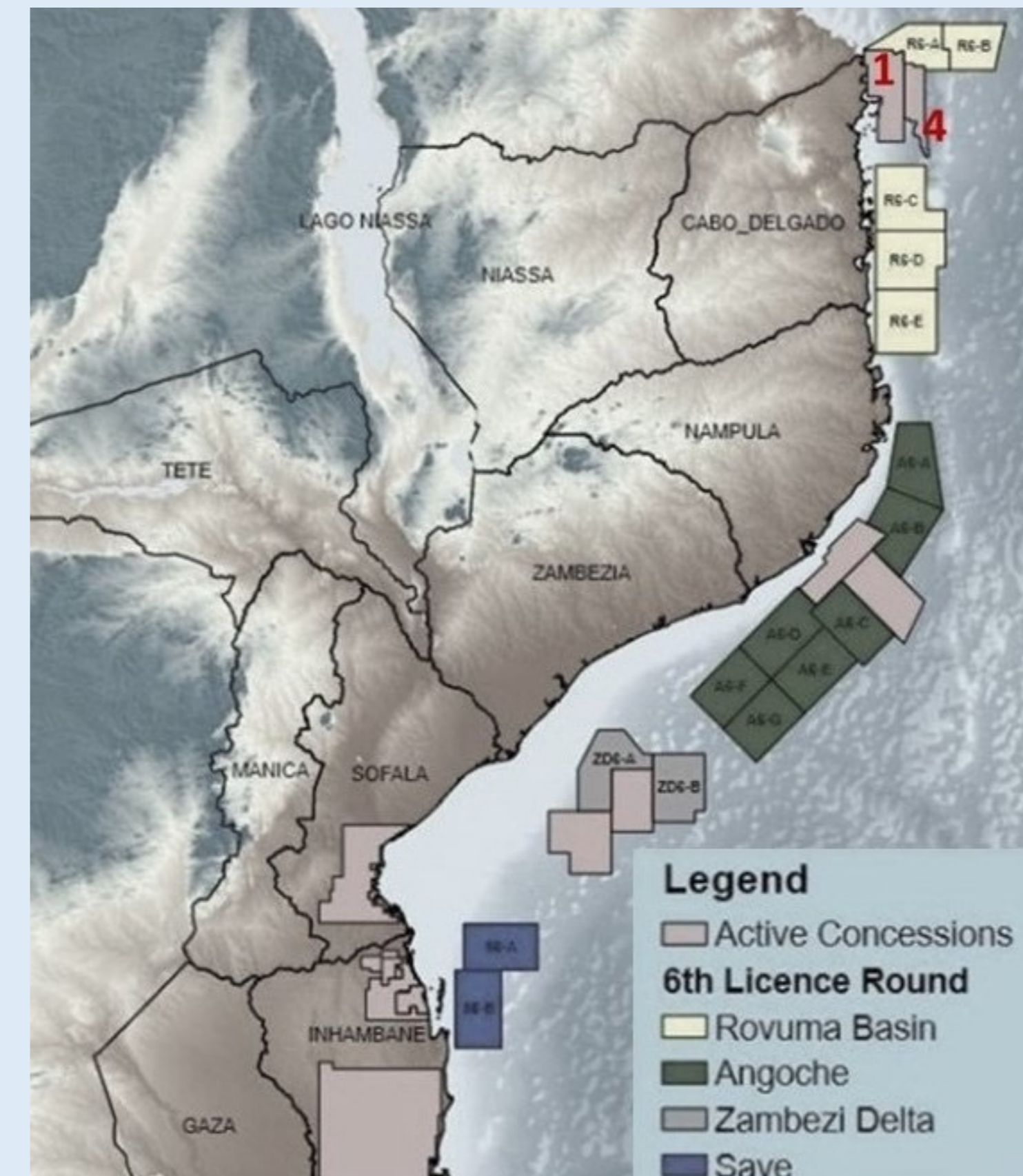


Fig 1: Present and future concession areas

Methods

The present paper is an interdisciplinary account of what is presently known in the above regards, based on interview data along with 'grey material' and Environmental Impact Assessments.

Results and Discussion

Table 1: Overview of Commercial Actors – Cabo Delgado Gas Complex

	TOTAL Energies	ENI Rovuma Basin
Mozambican company name	Mozambique LNG	Coral Sul FLNG
Concession area	Area 1, Rovuma Basin	Area 4, Rovuma Basin
Predecessor	Anadarko	ENI East Africa
Consortium partners/co-owners	Total (26.5%) + Mitsui (20%) + Empresa Nacional de Hidrocarbonetos (15%) + BPRL (10%) + Oil India (10%) + ONGC Videsh (10%) + PTT (8.5%)	Mozambique Rovuma Venture [ENI and ExxonMobile] (70%) + Empresa Nacional de Hidrocarbonetos (10%) + Galp (10%) + KOGAS (10%)
Contractor/s 1 – Ground works incl dredging	Van Oord	
Contractor/s 2 – Subsea infrastr	TechnipFMC	TechnipFMC
Contractor/s 3 – LNG construction	CCSJV (Saipem, Chiyoda, MacDermott)	TechnipFMC, Samsung
Contractor/s 4 – Support facilities (workers' housing)	Gabriel Couto	
Contractor/s 5 – Environmental impact mitigation	ERM, Digby Wells Environmental, Natural Scientific Services CC, Enviro-Insight, Lwandle Technologies (Pty) Ltd, Prestedge Retief Dresner Wijnberg	ERM, Digby Wells Environmental, Natural Scientific Services CC, Enviro-Insight, Lwandle Technologies (Pty) Ltd, Prestedge Retief Dresner Wijnberg, Geoteam
Contractor/s 6 – compensation, resettlement	Ramboll	
Contractor/s 7 – Corporate social responsibility	Azul Consultoria, True North, Veggie Basket, Masc, IFPELAC, Saint Egidio, TSEBO, Cochrane, Sunshine Nuts, Eden Refrostation Projects, Max Lda, Casa do Agricultor, Escola de condução Wanga, Escola de Condução Muacane, Fumilar via MASC, VAMAZ e Incomati, GAPI, MOZParks, UniLúrio, ENCOM, Radio Moçambique, MISAU & PATHFINDER, AQI	UniLúrio, AMOR, Universidade Eduardo Mondlane, Escola Industrial e Comercial, AVSI

- Gas wells and subsea collection system;
- Submarine gas transmission systems on the high seas
- Connecting the gas field to the onshore LNG plant;
- 2 FLNG

Offshore

- Multi-Purpose Dock (MPD)
- Facility for LNG exploitation;
- LNG facilities: Gas reception, treatment, dehydration, condensate stabilisation and LNG processing facilities;
- 2 Pipelines (across the coral reefs)

Nearshore

- Gas turbines for power generation and associated distribution within the project premises;
- Temporary and permanent accommodation for workers and associated facilities;
- A pioneering 1.7 km runway and a 3.5 km permanent airstrip and associated facilities; and
- Associated infrastructures: roads, water treatment, sewage treatment and waste management, storage facilities, office buildings, etc.

Onshore

Fig. 2: The gas complex project

Offshore

- Drilling wells installing pipelines on the seabed
- connect the wells to onshore LNG.

Nearshore

- Construction of a multi-purpose dock
- Construction of an export wharf

Onshore

- Construction and operation of LNG facility
- Construction of associated infrastructures: housing, construction camp, airstrip, etc.

Impacts

- drilling chips discharge
- waste sludge discharges
- hydrotest discharges
- traffic increase
- habitat modification
- Almost no fishing in the bay during the dredging

- Disturbance in seagrass carpet & Coral reefs
- Loss of mangrove and estuary areas
- Increased noise
- Modification of the beach
- Invasion of exotic sp

- Atmospheric emissions
- Greenhouse gas emissions (climate change)
- Noise generation
- Visual landscape modification
- Soil impacts
- Groundwater use
- Surface ecology
- Impacts on vegetation, herpetofauna, avifauna and mammals

Fig. 3: Activities to cause some impact

Physical impacts

- Air quality
- GHG emission
- Noise
- Landscape, seascape and visual
- Soils
- Hydrology
- Groundwater

Biological Impacts

- **Marine Ecology**
- Coral reefs
- Benthos
- Influence on fish stock levels
- scaring away whales, dolphins and turtles
- **Terrestrial Ecology**
- Surface water ecology
- Vegetation
- Herpetofauna
- Avifauna
- Mammals

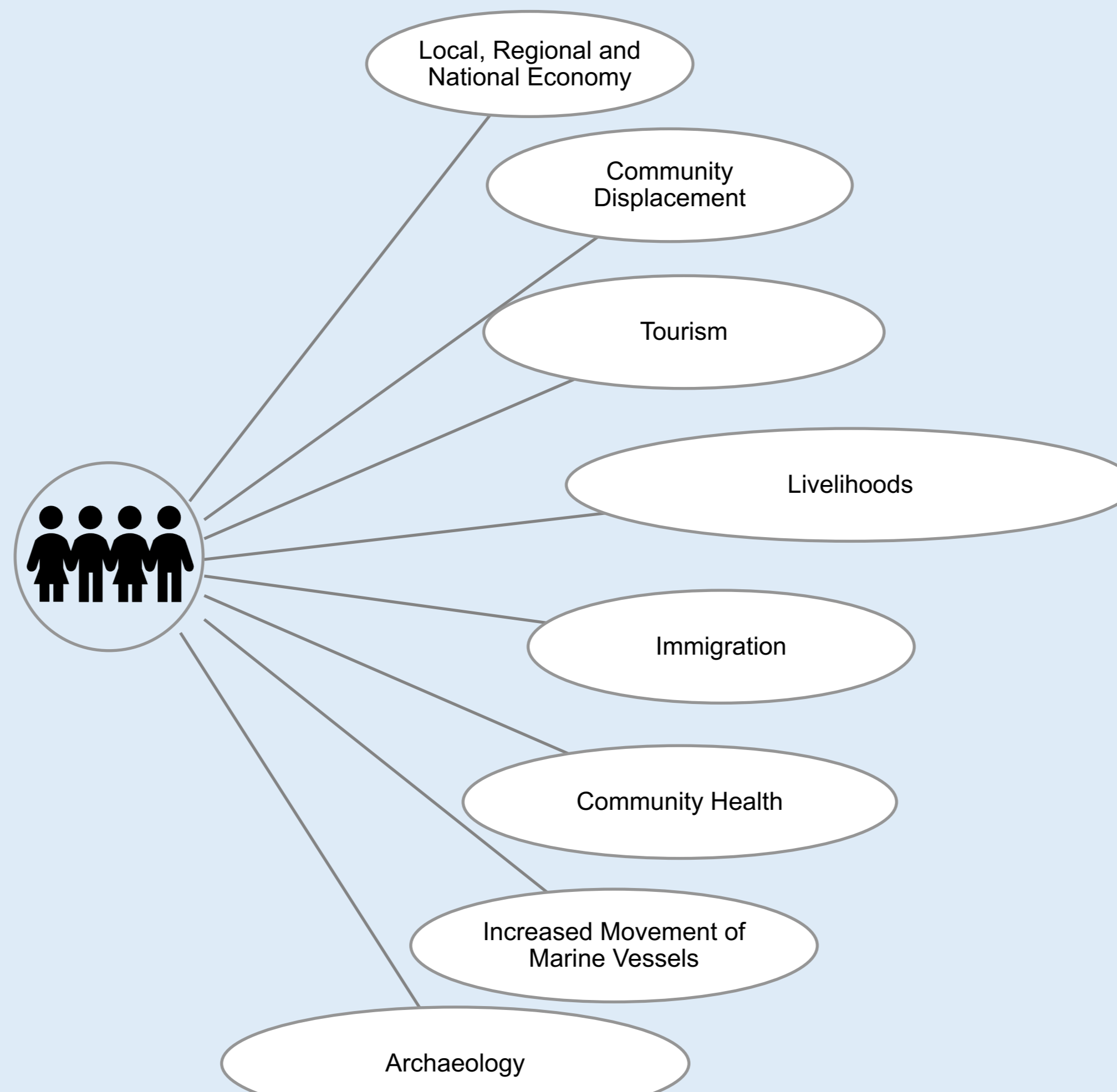


Fig. 5: Social Impact

Fig. 4: Environmental Key Impacts

Conclusion

Palma Bay and its surroundings are characterized by different habitats and the onshore project area is located within three types of habitat with great ecological importance: Swamps, wetlands, and forests, thus supporting a large food chain that is being impacted due to the construction activities and impacts shall continue through 25 years or more.

Environmental impacts will be felt at the location where key infrastructural interventions in the *construction* phase will occur. Social impacts is notable due to resettlement, fisheries restriction and migration movements. Another effect is the livelihood change, where households lost their agriculture fields due to displacement. However total is implementing different social programmes to the community recover from this consequence.