UN environment
United Nations Environment Programme

MITADER

Norad

OIL FOR DEVELOPMENT

INSTITUTIONAL CAPACITY NEEDS ASSESSMENT FOR

Strengthening Environmental Management in the Oil and Gas Sector in Mozambique

First published in 2018 by the United Nations Environment Programme

This project was made possible by the generous contribution of Norway's Oil for Development (OfD) Programme.

United Nations Environment Programme
P.O. Box 30552, Nairobi, KENYA
Tel: +254 (0)20 762 1234
Fax: +254 (0)20 762 3927
E-mail: uneppub@unep.org
Web: http://www.unep.org

UNEP. (2018). Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique.

Prepared by the UN Environment Crisis Management Branch: Matthew Richmond, Inga Petersen, Sharon Brooks and Marisol Estrella

Design and layout: Lynda Monk/Red Kite Creative Ltd

Cover photo: Inhassoro beach-seine fishers and women buyers about to divide the catch, with Bazaruto Archipelago Marine Park in the background.

INSTITUTIONAL CAPACITY NEEDS ASSESSMENT FOR

Strengthening Environmental Management in the Oil and Gas Sector in Mozambique

Awareness Raising Workshop on the role of environmental management in the oil and gas sector and initiating the capacity needs assessment process held at Hotel Cardoso, Maputo, 20 February 2018

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES & TABLES

ACKNOWLEDGEMENTS

The UN Environment team wishes to thank the 80 plus individuals for their time, patience and contribution to the Capacity Needs Assessment process that started in February 2018 and included those who attended the Introductory Meeting in March, the Foundation Course on “Oil and Gas Exploration and Production and Promoting Sound Environment Management” in late April and the Validation Workshop of early May. For facilitating the entire process from the start, we are very grateful to Suleimane Meguegy (FNDS), Rosana Francisco (MITADER/DINAB) and Abelina Chambule (INP). To those who took the time to complete the capacity needs assessment questionnaire, and responded to numerous email requests, we value your contribution and thank you for your time.

LIST OF ACRONYMS

ACRONYM	Name of entity [English translation] (parent Ministry where applicable)
AFD	Agence Française de Développement
AGO	Attorney General's Office
ANP	Administração Nacional das Pescas [National Fisheries Administration] (MIMAIP)
ANAC	Administração Nacional das Áreas de Conservação [National Administration of Conservation Areas] (MITADER)
ANE	Agência Nacional de Estradas [National Road Agency] (MTC)
AQUA	Agência Nacional para o Controlo de Qualidade Ambiental [National Agency of Environmental Quality Control] (MITADER)
CENACARTA	Centro Nacional de Cartografia e Teledetecção [National Cartography and Remote Sensing Centre] (MASA)
CIP	Centro de Integridade Pública [Public Integrity Centre]
CNA	Capacity Needs Assessment
COMBO	COnservation, impact Mitigation and Biodiversity Offsets
CONDES	Conselho Nacional para o Desenvolvimento Sustentável [National Council for Sustainable Development]
CPF	Central Processing Facility
CTA	Commisão Têcnico de Avaliação [Technical Evaluation Commission or Committee]
DEA	Divisão Educação Ambiental [Department of Environmental Education] (MITADER)
DGA	Divisão Gestão Ambiental [Department of Environmental Management] (MITADER)
DINAB	Direcção Nacional do Ambiente [National Directorate of Environment] (MITADER)
DINAF	Direcção Nacional de Florestas [National Directorate of Forestry] (MITADER)
DINAS	Direcção Nacional de Agricultura e Silvicultura [National Directorate of Agriculture and Forestry] (MASA)
DINAT	Direcção Nacional de Terras [National Directorate of Land] (MITADER)
DINATUR	Direcção Nacional do Turismo [National Directorate of Tourism] (MICULTUR)
DINOTER	Direcção Nacional de Ordinamento Territorial e Reassentamento [National Directorate of Resettlement and Territorial Planning] (MITADER)
DLA	Divisão Licenciamento Ambiental [Department of Environmental Licensing] (MITADER)
DNAS	Direccao Nacional Ação Social [National Directorate of Social Action] (MGCAS)
DNCH	Direccao Nacional de Carvão e Hidrocarbonetos [National Directorate of Coal and Hydrocarbon]
DNGRH	Direcção Nacional de Gestão de Recursos Hídricos [National Directorate of Water Resources Management] (MOPHRH)
DNI	Direcção Nacional de Industrias [National Directorate of Industry] (MIC)
DNPO	Direcção Nacional de Planificação e Orçamento [National Directorate of Planning and Budgeting] (MEF)
DNSP	Direcção Nacional de Saúde Publica [National Directorate for Public Health] (MISAU)
DPTADER	Direcção Provincial da Terra, Ambiente e Desenvolvimento Rural [Provincial Directorate for Land, Environment and Rural Development] (MITADER)
EIA	Environmental Impact Assessment
EMP	Environmental Management/ Monitoring Plan
ENH	Empresa Nacional de Hidrocarbonetos [National Hydrocarbon Company] (MIREME)
EPDA	Estudo de Pre-avaliação e Definição de Âmbito [Scoping Report]
ESHSS	Environment, socio-economic, health, safety and security
ESIA	Environmental and Social Impact Assessment
FFEM	Fonds Français pour l'Environnement Mondial
FNDS	Fundo Nacional Desenvolvimento Sustentável [National Fund for Sustainable Development) (MITADER)
GIS	Geographic Information System

HSE	Health, Safety and Environment
IFC	International Finance Corporation
IGREME	Inspecção Geral dos Recursos Minerais e Energia [General Inspector of Mineral and Energy Resources] (MIREME)
IIP	Instituto de Investigações Pesqueiras [Fisheries Research Institute] (MIMAIP)
INE	Instituto Nacional de Estatística [National Institute of Statistics] (MEF)
INP	Instituto Nacional de Petróleo [National Institute of Petroleum] (MIREME)
INAHINA	Instituto Nacional de Hidrografia [National Institute of Hidrography] (MTC)
INAMAR	Instituto Nacional da Marinha [National Naval Institute] (MTC)
INDPA	Instituto Nacional de Desenvolvimento da Pesca e Aquacultura [National Development Institute of Fisheries and Aquaculture] (MIMAIP)
INGC	Instituto Nacional de Gestão de Calamidades [National Institute of Disaster Management]
ITADER	Inspecção da Terra, Ambiente e Desenvolvimento Rural [Inspectorate of Land, Environment and Rural Development] (MITADER)
LNG	Liquefied Natural Gas
MAGTAP	Mining and Gas Technical Assistance Project (MIREME; funded by The World Bank)
MASA	Ministério da Agricultura e Segurança Alimentar [Ministry of Agriculture and Food Safety]
MDAs	Ministries, Departments and Agencies
MEF	Ministério da Economia e Finanças [Ministry of Economy and Finance]
MGCAS	Ministério do Género, Criança e Acção Social [Ministry of Gender, Child and Social Action]
MIC	Ministério da Indústria e Comércio [Ministry of Industry and Commerce]
MICULTUR	Ministério da Cultura e Turismo [Ministry of Culture and Tourism]
MIMAIP	Ministério do Mar, Aguas interiors e Pescas [Ministry of Sea, Inland Waters and Fisheries]
MIREME	Ministério do Recursos Minerais e Energia [Ministry of Mineral Resources and Energy]
MISAU	Ministério da Saúde [Ministry Of Health]
MITADER	Ministério da Terra, Ambiente e Desenvolvimento Rural [Ministry of Land, Environment and Rural Development]
MITRESS	Ministério do Trabalho, Emprego e Segurança Social [Ministry of Labour, Employment and Social Security]
MOPHRH	Ministério das Obras Públicas, Habitação e Recursos Hídricos [Ministry of Public Constructions, Housing and Water Resources]
MTC	Ministério dos Transportes e Comunicação [Ministry of Transports and Communications]
NGO	Non-Governmental Organization
NOSCP	National Oil Spill Contingency Plan
OfD	Oil for Development
OSCP	Oil Spill Contingency Plan
PAP	Project Affected People
SCDS	SAL Consultoria em Desenvolvimento Social Lda
SDPI	Serviço Distrital de Planeamento e Infra-Estrutura [District Planning and Infrastructure Service] (MITADER)
SEA	Strategic Environmental Assessment
SESA	Strategic Social and Environmental Assessment
ToR	Terms of Reference
WCS	Wildlife Conservation Society

EXECUTIVE SUMMARY

Onshore gas reserves in the Mozambique Basin, Inhambane Province, have been utilized since 2004, and are currently supplying gas for industrial uses and electricity generation. Small amounts of light oil have also recently been found at Inhambane with production soon to commence. Off Cabo Delgado, the largest offshore natural gas discoveries in sub-Saharan Africa in 2006 put Mozambique on the global energy map. Current offshore recoverable gas reserves in the country are estimated to be 160 trillion cubic feet (Tcf), equivalent to about 27 billion oil barrels, located in the Ruvuma Basin off the north coast. There is now political momentum in the country to achieve liquefied natural gas (LNG) production by 2023.

Well-aware that oil and gas exploration and production activities may lead to adverse social and environmental impacts, the Government of Mozambique recently engaged in a Strategic and Social Environmental Assessment (SESA) for the mining and gas sectors, through the MAGTAP (Mining and Gas Technical Assistance Project), supported by The World Bank. The resulting report on the SESA (MIREME, 2017) examines the environment, socio-economic, health, safety and security (ESHSS) regulations, policies, governance and decision-making with respect to the oil and gas and mining sectors. Its objectives, as a policy tool, are to evaluate and prioritize cumulative impacts, identify gaps and overlaps in institutional mandates and regulations, and to propose measures to improve management of ESHSS issues in the sector. The action plan for the SESA was formally launched in June 2018. A second initiative is the COMBO (COnservation, impact Mitigation and Biodiversity Offsets) Project (2018) supported by the Agence Française de Développement (AFD), Fonds Français pour l'Environnement Mondial (FFEM) and Mava Foundation, that focuses on conservation and impact mitigation to achieve a no net loss or a net gain of biodiversity (that will include implementation of biodiversity offsets), applicable to all development sectors. This four-year project aims to support the Government on elaborating regulations, technical guidelines, development planning and Strategic Environmental Assessments (SEAs).

Several other international development partners, including the Government of Norway's Oil for Development Programme (OfD), have come forward to support the Government of Mozambique in managing its emerging oil and gas sector. On behalf of the Government of Mozambique, UN Environment is undertaking an Institutional Capacity Needs Assessment (CNA) on Strengthening Environmental Management in the oil and gas Sector. From February to June 2018, the CNA was carried out by UN Environment under the OfD cooperation framework. The CNA aims to contribute towards the country's long-term capacity development on environmental management in the petroleum sector.

OBJECTIVES AND SCOPE

The objective of the CNA is to document the capacity needs of key Government Ministries, Departments and Agencies (MDAs) with respect to environmental management in the oil and gas sector. The CNA is contributing to a national "roadmap" that outlines the strategic capacity needs of Government institutions to strengthen environmental management in the oil and gas sector. This provides a basis for further designing the environmental component of the OfD Programme in Mozambique and support the Government in its outreach to the international development community.

In February 2018, UN Environment initiated the CNA process in Maputo, with a team of four experts. A four-phased approach was adopted that included: (i) desk review of available documentation; (ii) an initial awareness-raising meeting and data gathering exercise that included consultations with key informants, and use of a questionnaire; (iii) field visits and a training course; and (iv) a Validation Workshop which discussed and prioritized key findings, now included in the report.

The MIREME (2017) SESA report and the 2018 COMBO Project Report were reviewed with respect to potential overlapping recommendations with this CNA, highlighting where there is a need to harmonise and avoid duplication of efforts. As such, this report focuses on a strategic assessment of capacity gaps and a prioritisation of recommendations to be implemented by the Government. This 2018 CNA also goes beyond the MIREME (2017) SESA recommendations and looks at cross-cutting challenges and opportunities and the overall capacities of Government institutions to deal with the emerging challenges of upstream oil and gas activities over the long-term.

This CNA report does not intend to duplicate previous assessments. Instead, it examines the roles various Government institutions play in environmental management in the oil and gas sector and the challenges experienced by the individual institutions. It identifies a number of recommendations to address each of these challenges. Through the validation process attended by multi-sectoral Government institutions and Provincial Government officials, all 21 key challenges identified during the CNA were accepted, organized under seven thematic areas (see Table A1). Together, the 38 recommendations form the basis to inform future efforts in the sector.

The seven main thematic areas assessed within the scope of environmental management include: (i) policies and legal framework, (ii) institutional framework, (iii) staffing, resources and technical capacity, (iv) Environmental Impact Assessment process, (v) environmental data, (vi) emergency preparedness and response, and (vii) chemicals and waste management. Each of these are described in more detail below, corresponding to the main thematic sections in the report.

POLICIES AND LEGAL FRAMEWORKS RELATED TO OIL AND GAS

Section 4.1 provides a brief overview of the availability of relevant legislation in Mozambique with reference to environmental management as applied to the oil and gas sector[1]. The current legal status in Mozambique was then compared with what is considered international best practice based on experience in other petroleum-producing countries with well-established legal systems.

In general, Mozambique has an adequate legislative framework in place to support most aspects of environmental management in the oil and gas sector. However, these legal instruments need to be updated, inconsistencies and overlaps clarified and, under specific legislation, detailed regulations are yet to be compiled. These gaps were identified as a main challenge. Several environmental management regulations are available, with others currently under review in order to more effectively respond to emerging challenges from oil and gas activities.

The first and most wide-ranging recommendation prioritized by Government stakeholders who participated in the CNA process is a comprehensive review of the legislation relevant to the oil and gas sector. The five other recommendations, responding to the corresponding challenges identified, cover: raising awareness about the oil and gas sector among legislators and the institutions who support them; examination of implementation challenges and institutional mandates to resolve inconsistencies; examination of legislation to formalise the SESA/SEA for this sector (and others); and, through the new Petroleum Regulations, addressing means for documentation of air emissions specific to the oil and gas sector.

1 *The study did not review or comprehensively assess the contents of every piece of relevant legislation.*

INSTITUTIONAL ARCHITECTURE FOR ENVIRONMENTAL MANAGEMENT IN THE OIL AND GAS SECTOR

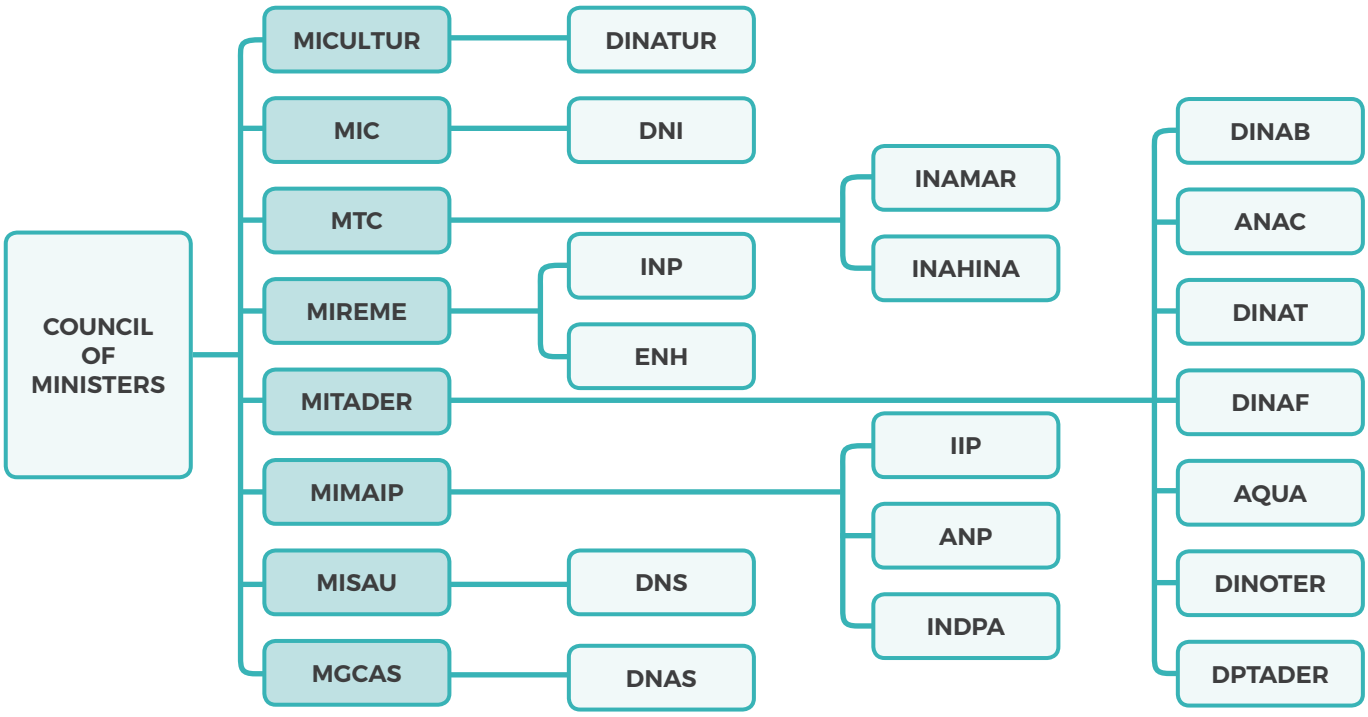
A profile of each of the identified National Government institutions with important roles in supporting environmental management in the oil and gas sector is provided in **Section 4.2** (and **Annex 4**). When assessing the institutional architecture, UN Environment concluded that Mozambique has a comprehensive institutional framework to address issues related to environmental management in the oil and gas sector. As the current administration in Government has made achieving LNG gas production in post-2023 a national priority, all Government representatives who were interviewed demonstrated awareness of the Government's targets and were cognizant of the potential challenges this national priority brings to their respective institutions.

Various institutions or MDAs have been identified as having important roles in supporting the oil and gas sector, with eight principal ministries involved with environmental management aspects of upstream oil and gas activities in Mozambique (**Figure A1**).

There is presently a very high level of commitment from the top leadership of every institution to support strong environmental management in the oil and gas sector. What is now needed is to translate this political leadership and commitments into the required action plans, including the required human, technical and financial resources to implement such plans.

The two main challenges identified, for which four recommendations emerge, are to resolve the overlapping and unclear institutional mandates that lead to inefficiencies and operational delays with respect to the environmental impact assessment (EIA) process, and unclear (and weak) coordination mechanisms for technical exchange on environmental issues. Recommendations to address these are to examine and contrast mandates of relevant institutions to determine the most appropriate approaches to reducing overlaps and delays, determine the most appropriate mechanism for higher-level strategic planning and coordination of oil and gas issues, the establishment of a technical advisory organ, and using the latter to share information between institutions and the wider public.

FIGURE A1. Institutional architecture for environmental management in the oil and gas sector in Mozambique, represented by eight principal ministries (shaded) with various agencies and directorates.
See List of Acronyms for full titles of the MDAs.



REGULATORY INSTITUTIONS: STAFFING, RESOURCES AND TECHNICAL CAPACITY

Despite the demand for environmental management of oil and gas activities being erratic over the last decade, Mozambique regulators have succeeded in completing reviews of impact assessments, followed compliance monitoring and reviewed and conducted audits. Nonetheless, most institutions interviewed agreed that staff levels in general were not sufficient for the mandated tasks, resulting in some departments being overwhelmed with projects.

As described in **Section 4.3**, of the three challenges identified, the most pressing is the need to boost technical capacity across several ministries including within provincial offices. Of particular note is the need to reinforce the Direcção Nacional do Ambiente (DINAB) [or National Directorate of Environment], both at technical and resource levels. The other two challenges identified include: the need for improved funding of the EIA review and compliance monitoring at all levels and the need to increase motivation among MDAs personnel. One positive area highlighted is maintaining gender balance within Government institutions, where an even split between women and men was reported.

Recommendations to address the three challenges include, respectively, improving technical capacity across relevant MDAs, meeting funding requirements for EIA reviews, compliance and monitoring, and achieving staffing and qualifications needed to match mandated management tasks.

THE EIA PROCESS FOR OIL AND GAS PROJECTS

There are two focus areas concerning the EIA review process: the institutions involved (and coordination of their participation) and the personnel within those institutions. **Section 4.4** presents the findings from interviewed entities who confirmed that, in general, there appears to be a good level of institutional awareness for environmental issues and the EIA process in particular, but the lack of knowledge of specific environmental issues related to the oil and gas lifecycle was a major shortcoming.

While the Administração Nacional das Áreas de Conservação (MITADER) [or National Administration of Conservation Areas] relies on the Instituto Nacional de Petróleo (INP) [or National Institute of Petroleum] for technical guidance on oil and gas issues, INP refers back to MITADER for environmental expertise, and neither entity ultimately feels fully responsible for final environmental due diligence. The emphasis here is on the EIA process itself where five challenges were identified, accompanied by 11 recommendations.

In order to review and strengthen the EIA process, five recommendations are suggested, ranging from examination of inter-ministerial coordination mechanisms with development of an electronic database for EIA documents; establishing rosters of specialist reviewers and EIA consultants, and the potential involvement of the Attorney General's Office in EIA reviews; and operationalising the Commisão Têcnico de Avaliação (CTA) as a permanent coordination mechanism for EIA review and monitoring processes.

The other challenges, with corresponding recommendations, relate to lack of clarity on internal and external communication platforms for EIA documents, insufficient interaction between the proponent and the regulator, weaknesses in compliance and monitoring procedures (requiring review and addressing scarcity of facilities) and lack of procedures and guidance on decommissioning.

ENVIRONMENTAL DATA RELEVANT TO THE OIL AND GAS SECTOR

In Mozambique, there are a number of existing databases, hosted by diverse public and private institutions. However, there is no environmental database that can be accessed by all MITADER staff and there seems to be lack of integration. The value of having a complete set of up-to-date data on the condition of the marine and terrestrial environment, including biodiversity and environmental parameters, hosted by a digital platform and accessible to all relevant entities cannot be overstated. The four main features of environmental datasets are its availability, its accessibility to end users, the capacity of users to work with, operate and benefit from the information, and the means to update it.

Section 4.5 describes two challenges identified that are relevant to the oil and gas sector, namely, there is an incomplete (and inaccessible) environmental database to support environmental management, and linked to this, the absence of a sensitivity atlas to oil spills. Recommendations to address these challenges include undertaking a digital data inventory; creation of an online database hosted by an appropriate institution; and carrying out environmental surveys to fill existing data gaps, guided by the creation of a working group of experts. Examination of the legal basis for integrated spatial planning and development of a sensitivity atlas are additional recommendations related to strengthening oil spill preparedness and response.

EMERGENCY PREPAREDNESS AND RESPONSE

With the development of the oil and gas sector is the increase in the risk of accidents that require an emergency response apparatus. Offshore exploration and development drilling, for example, requires regular supplies of fuel for the drill-ship and return trips with waste consignments, including of hazardous products. With the Instituto Nacional da Marinha (INAMAR), the national naval authority, as the lead agency for oil spill preparedness and response, the focus has traditionally been on shipping, and hence centred at the key ports: Maputo/Matola, Beira, Nacala, and Pemba, rather than in areas of intense oil and gas operations such as off Cabo Delgado.

Section 4.6 describes the limited capabilities in Mozambique to cope with a major oil spill, although there is a National Oil Spill Contingency Plan (NOSCP) that is under review at present. The two challenges identified relate to the unclear alignment on requirements and preparedness between relevant agencies for responses to oil spills, and a similar lack of clarity on the status of emergency preparedness and response capacity involving local district staff and participation of the oil and gas industry themselves.

There are a number of recommendations under this section. Initially, there is a need for a review of the risks of oil spills and other types of pollution related to the Oil and gas sector, focused on the geographical areas of activity, accompanied by a revision and update of the NOSCP accordingly. The latter should include environmental sensitivity mapping (see above) and a risk assessment and prevention strategy. Further, there is a need to align requirements, preparation and responses for oil spills on land under the above-updated NOSCP, with clearly established roles and tasks for all institutions, at different levels, and between Government institutions and operators. It is also recommended that coordination mechanisms are needed between Government and oil and gas operators, specifically to address spills related to the oil and gas sector, which should be addressed in the NOSCP. Finally, there is a need to review the technical capacity and coordination of responses within relevant institutions involved in off- and on-shore spill scenarios under the above-updated NOSCP.

CHEMICALS AND WASTE MANAGEMENT

Inquiries on waste associated with the oil and gas sector were included in all interviews in February 2018. The main challenge raised in this area is the limited expertise locally and the general lack of hazardous waste management facilities to support waste streams generated by the oil and gas sector. Similarly, there is also poor general knowledge of and management associated with chemicals used in the sector. The issue of chemicals and waste management therefore warrants more detailed assessment, and further training is needed by the relevant Government institutions to support appropriate design, development and environmental compliance monitoring of hazardous waste management facilities, in the context of oil and gas development.

Section 4.7 presents the three challenges emerging from the analysis: shortage of hazardous waste management facilities to handle oil and gas waste, and of accredited analytical chemical laboratories (for baseline and routine monitoring); and unclear institutional mandates on chemical management relevant to the needs of the oil and gas sector.

Recommendations to address these challenges focus on defining roles and capacities of Government institutions with respect to providing accredited laboratory facilities and reviewing legal and practical requirements of the oil and gas sector pertaining to hazardous waste management, in both cases, potentially involving the private sector. Also recommended were the need for reviews of the chemical needs of the oil and gas sector and local capacity to manage these needs, including consideration of appropriate use of chemical dispersants for oil spill response.

WAY FORWARD

The 21 challenges and corresponding 38 recommendations, under the seven main thematic areas, described above (and detailed in **Table A1**) form the basis to inform future efforts in the sector. Some of the desired outcomes can be achieved internally, while others would benefit from support from international development partners. The Government will consider and direct the appropriate next steps based on recommendations and national policy priorities.

TABLE A1. Summary of key challenges and recommendations.

No	Key Challenges	Recommendations
Section 4.1 Policies and legal frameworks related to oil and gas		
1.	Incomplete and/or inconsistent legislation relating to oil and gas aspects	Conduct a comprehensive review of legislation and where necessary update relevant legislation to include oil and gas aspects. Focus includes addressing inconsistencies and omissions, air emissions from oil and gas production and exploration, regulations for soil management/pollution, noise pollution, rules on use of dispersants for oil spills and decommissioning.
		Develop awareness of oil and gas among legislators and technical knowledge among the MDAs who provide the information to legislators when they develop and discuss legislation.
2.	Inconsistent implementation of legislation (including mandates)	Examine and address reasons for discrepancies and failures to implement legislation relevant to oil and gas activities.
		Address overlapping institutional mandates as well as gaps between the various entities, specific to environmental aspects of the oil and gas sector.
3.	Unclear legislation to conduct SESA/SEA relating to oil and gas	Examine the final legal outcome resulting from the MIREME (2017) SESA process with a view to consider developing legislation for undertaking SESAs/SEAs in the country.
4.	Undocumented gas flaring and fugitive emissions	Examine the new Petroleum Regulations and determine the most appropriate means to document volumes and types of gases flared and fugitive emissions.
Section 4.2 Institutional architecture for environmental management in the oil and gas sector		
5.	Overlapping and unclear institutional mandates leading to inefficiencies and operational delays	Examine and contrast mandates of relevant institutions to resolve inconsistencies, including those related to environmental monitoring.

No	Key Challenges	Recommendations
6.	Unclear (and weak) coordination mechanisms for technical exchange on environmental issues	Review and determine the most appropriate mechanism for higher-level strategic planning and coordination of oil and gas issues, mindful that Government institutions are represented at both national and sub-national/provincial level.
		Establish a technical advisory organ/council for oil and gas where stakeholders (Government institutions and other interested parties) can obtain and share information at technical level. Such a multi-institutional coordination mechanism, would need to have clearly defined terms of reference (ToRs), proposed workplans and monitoring framework, and a legal mandate given from a higher-level body. Using the platform created (above), develop mechanisms to share information between institutions through designated focal points and with the wider public.
Section 4.3 Regulatory institutions: Staffing, resources and technical capacity		
7.	Gaps in technical capacity related to oil and gas within relevant institutions	Examine needs and means to improve technical capacity within relevant institutions, especially DINAB as the leading environmental regulatory agency. Examples include provision of specialized courses on environmental issues important for managing the oil and gas sector, as well as strategic level planning, use of environmental data and compliance monitoring, etc.
8.	Inadequate funding for EIA reviews and compliance monitoring at all levels	Review funding requirements, and funding sources, for EIA and compliance monitoring, including inspection visits and project planning, and mobilise environmental licensing fees to support environmental monitoring and evaluations, especially by DINAB.
9.	Weak motivation among personnel	Review staffing and qualifications needed to match mandated management tasks, redistribute technical staff according to mandated tasks, with commensurate salary scales, and ensure payment of the fee for attendance of CTA for EIA review.
Section 4.4 The EIA process for oil and gas projects		
10.	Need to review and strengthen the EIA process	Examine existing inter-ministerial coordination mechanisms, and the potential to streamline the process for EIA reviews, including staff, planning and establishment of a permanent coordination committee/core within MITADER for oil and gas activities.
		Establish a roster of "specialist reviewers" to be screened by experienced and qualified third parties, and managed by DINAB.
		Potentially consider involvement of the environmental department of the Attorney General's Office, notably in projects that are more legally demanding, given their complexity (as indicated by the COMBO Project (2018)).
		Operationalize the CTA as a permanent mechanism and strengthen this committee with financial resources, as well as human and material resources.
		Develop an approved roster of national EIA consultants approved by DINAB for oil and gas projects.

No	Key Challenges	Recommendations
11.	Unclear and/or lack of internal and external communication platforms for EIA documents	Examine means to disseminate environmental data associated with activities and their respective EIA reports and accompanying management plans and approval conditions to the wider public and civil society. Options include creation of an electronic database and website or other open data platform for publishing EIA reports, management plans and related data for public access.
12.	Insufficient interaction between proponent and regulator	Examine benefits and procedures of including the proponent (and EIA consultant) during the final technical review of the EIA, aiming to reduce review time of the EIAs, clarify some areas during the EIA process and improve interaction between the regulator, proponent and the consultants.
13.	Weaknesses in compliance and monitoring procedures and facilities	Review procedures and facilities required for oil and gas project monitoring every five years.
		Resolve the scarcity of facilities (laboratory buildings and equipment) for environmental monitoring.
14.	Unclear procedures and understanding of decommissioning of oil and gas infrastructure	Conduct a review of the status and forecast of decommissioning requirements within the oil and gas sector and capacity of institutions to meet the needs (to enforce and monitor those requirements given to the operator).
		Capacitate institutions to respond to/address requirements of decommissioning of oil and gas infrastructure (including storage tanks) and fill the gaps in the legislation related to decommissioning, aligned with international trends in this important part of the project cycle.
Section 4.5 Environmental data relevant to the oil and gas sector		
15.	Incomplete (and inaccessible) environmental dataset to support environmental management of oil and gas activities	Undertake a data inventory of existing environmental data, ideally of digital data, and determine gaps and barriers and restrictions to access.
		Create a database that is accessible online and hosted by an appropriate institution.
		Conduct targeted environmental surveys where necessary in collaboration with relevant entities to fill data gaps (including for offshore areas) and help establish environmental baselines.
		Create a working group of inter-disciplinary experts, involving national universities, in the following research areas: ecology, zoology, botany, oceanography, geophysics, among others.
16.	Absence of maps showing sensitivity of habitats to oil spills	Examine the legal basis and associated guidance for integrated spatial planning that addresses multiple environmental, social and economic interests for oil and gas development.
		Develop an oil spill sensitivity atlas (and in doing so, establish a database) for each coastal province, to increase data resolution; and combine the seven provincial maps to form a complete national coastal sensitivity atlas.

No	Key Challenges	Recommendations
Section 4.6 Emergency preparedness and response		
17.	Unclear alignment on requirements and preparedness for oil spill response	Review risks of oil spills and other types of pollution related to oil and gas sector, focused on the geographical areas of activity; revise and update the NOSCP accordingly, to include, among others, environmental sensitivity mapping (see above) and a risk assessment and prevention strategy.
		Align requirements, preparation and responses for oil spills on land under the above-updated NOSCP, with clearly established roles and tasks for all institutions, at different levels, and between Government institutions and operators.
		Formulate coordination mechanisms between Government and oil and gas operators specifically to address spills related to the oil and gas sector.
18.	Unclear status of emergency preparedness and response capacity	Review technical capacity and coordination of responses within relevant institutions involved in off- and on-shore spill scenarios under the above-updated NOSCP.
Section 4.7 Chemicals and waste management		
19.	Shortage of accredited hazardous waste management facilities	Review the legal and practical requirements of the oil and gas sector with respect to in-country hazardous waste management facilities and, if appropriate, consider means to involve the private sector.
20.	Shortage of accredited analytical laboratories	Define the roles and capacity of Government institutions (including Agência Nacional para o Controlo de Qualidade Ambiental [National Agency of Environmental Quality Control], or AQUA) with respect to providing an accredited laboratory facility and, if appropriate, consider means to involve the private sector.
21.	Unclear institutional mandates on in-country chemical management relevant to the needs of the oil and gas sector	Review the chemical needs of the oil and gas sector and the capacity in-country to manage the use of chemicals, including for operational use and for use during accidents.
		Consider the appropriate use of chemical dispersants for oil spill incidents.

1 INTRODUCTION – THE OIL AND GAS SECTOR IN MOZAMBIQUE

1.1 EARLY EXPLORATION

Oil and gas exploration in Mozambique dates back to 1904 when the first activities began in the Sofala and Inhambane Provinces. More intensive exploration resumed between 1948 and 1974 when major international companies got involved. During this period several geophysical surveys and geological studies were conducted and several wells drilled. This resulted in the discovery of three gas fields: Pande, Búzi and Temane. However, despite their size, these natural gas discoveries were not considered useful for commercial purposes. At the time, the main purpose of the companies was to seek for oil, and there was limited technology and a market for natural gas. Over the following two decades, only six wildcat wells were drilled, including three offshore. It was not until 1981, with the creation of the Empresa Nacional de Hidrocarbonetos (ENH) [or National Enterprise of Hydrocarbons[2]], that petroleum exploration started to take place again with several multinational companies involved.

The main sedimentary basins, the Rovuma and Mozambique basins are located along the coast; hence, most exploration has taken place in the coastal zone or offshore (see **Figure 1**). The Mozambique basin extends along the coastal plain of central and southern parts of Mozambique while the Rovuma basin is located in the northern parts of the country from the coastal zone to deep-water offshore. Currently, there are 10 exploration areas in these two basins, and ENH participates in these activities in partnerships with other international companies. ENH interest (including that of its subsidiary, the Companhia Moçambicana de Hidrocarbonetos) in the different blocks ranges from 10 to 25 % (**Figure 1**).

After the short and intermittent history of oil and gas exploration that started in 1948 and continued to 1971, 51 exploration wells were drilled, and the Pande, Buzi and Temane gas fields were discovered. By end of the 1990s, a total of 84 wells had been drilled.

1.2 RECENT DEVELOPMENT AND DISCOVERIES

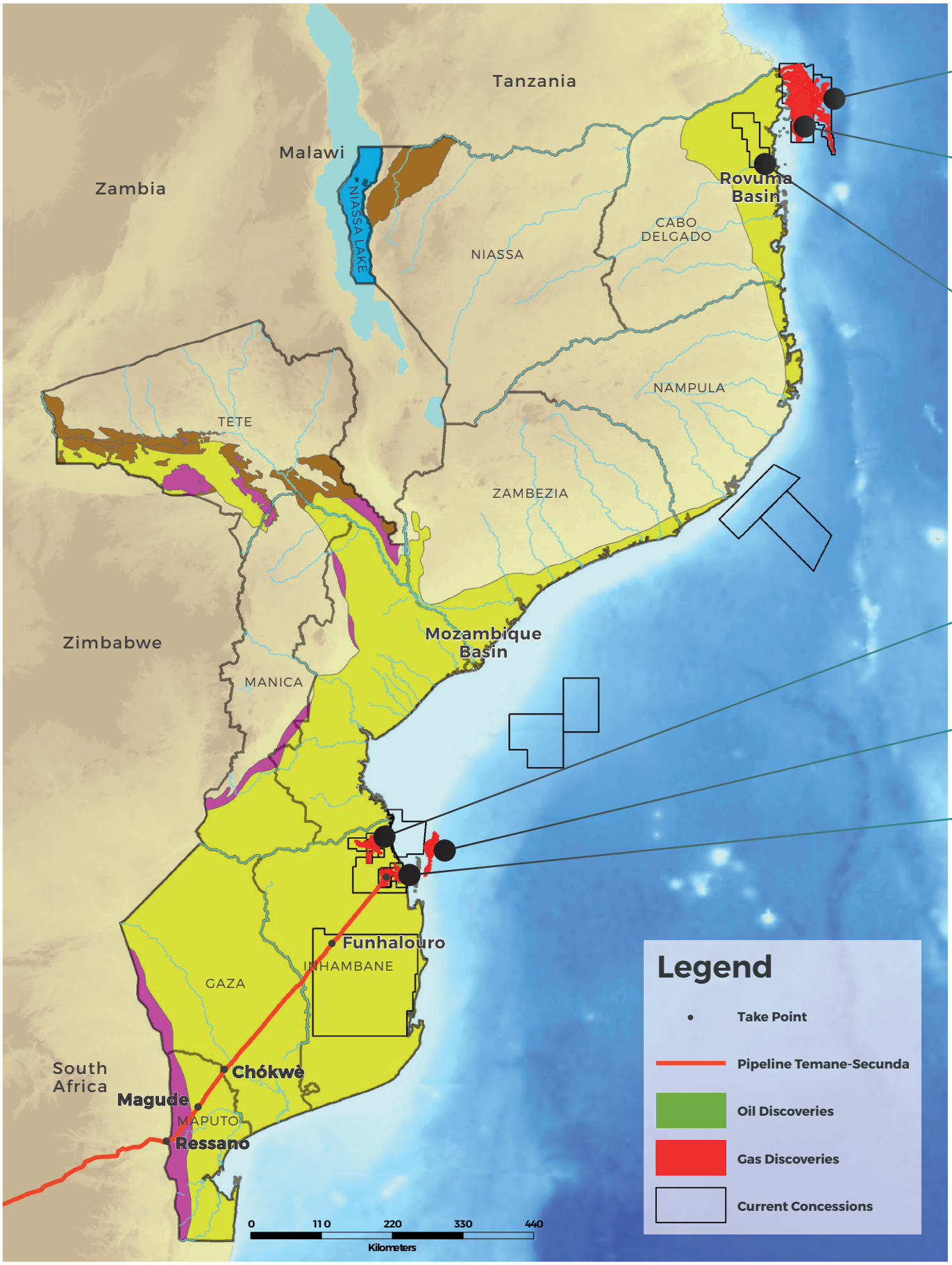
The South African company Sasol, in partnership with ENH and the International Finance Corporation (IFC) conducted an extensive campaign from the early 2000s, which included exploration and production wells in the Pande/Temane Block that led to the expansion of gas reserves and the discovery of the Inhassoro gas field, reaching a total of 5.5 trillion cubic feet (Tcf). This was sufficient for the construction of a gas processing facility in 2004. Currently, the only gas production in the country is from the onshore fields in Pande and Temane, with gas transported from the Pande and Temane to the natural gas Central Processing Facility (CPF) (**Figure 2**) and onwards to South Africa (and Maputo Province) through pipelines.

In March 2000, Mozambique launched its first offshore licensing round, which offered 14 blocks in the Mozambique Basin in the shallow and deep Zambezi delta area. In addition, a seaport has been dedicated solely for the petroleum industry: the Pemba Terminal, in Cabo Delgado province, is the first port terminal built to be entirely dedicated to oil and gas activities in Mozambique.

Operating from Pemba Port (**Figure 3**), offshore exploration drilling started in 2009, and by 2015 new natural gas finds, exceeding 160 Tcf were reported from the reserves discovered in the Rovuma Basin, off Palma. The Offshore Area 1 is located in the deep-water Rovuma

2 *Note: throughout this report all English translations of national institutions are given in square brackets […]*

FIGURE 1. Mozambique exploration map showing companies shares in blocks and the major hydrocarbon basins (shaded areas). Source: modified from INP (supplied December 2018).



Rovuma Offshore Area 4	
Empresa Nacional de Hidrocarbonetos	10%
Eni East Africa, S.p.A (Eni (35.7%), ExxonMobil (35.7%) & CNPC (28.6%))	70%
Galp	10%
Kogas	10%
Rovuma Offshore Area 1	
Anadarko Moçambique Área 1, Limitada	26.5%
BPRL Ventures Mozambique B.V.	10%
Empresa Nacional de Hidrocarbonetos	15%
Mitsui E&P Mozambique Area 1 Limited	20%
ONGC Videsh Limited (OVL)	10%
PTT Exploration & Production	8.5%
Videocon Mozambique Rovuma 1 Limited	10%
Rovuma Onshore Area	
Empresa Nacional de Hidrocarbonetos	15%
Wentworth Resources	85%
Pande/Temane (PPA)	
Companhia Moçambicana de Hidrocarbonetos	25%
International Finance Corporation	5%
Sasol Petroleum Temane	70%
Block 16 & 19	
Empresa Nacional de Hidrocarbonetos	15%
Petronas Carigali Moçambique E&P Ltd.	35%
Sasol Petroleum Sofala Limited	50%
Pande/Temane (PSA)	
Sasol Petroleum Moçambique	100%

Basin (**Figure 1**). The exploration activities in the Offshore Area 1 have resulted in six of the world's largest LNG discoveries in 2010, 2011 and 2012. These natural gas accumulations are located in water depths of approximately 2,000 m, which is well aligned with the skill sets of the Mozambique LNG sponsors and their project-management experience (LNG, n.d.).

It is expected that these volumes will make Mozambique the world's third largest LNG exporter and change Mozambique's landscape and economy. Infrastructure for the LNG finds is still lacking, but the companies Anadarko and Eni are planning to construct LNG facilities to produce 20 million tonnes per day. The project is expected to bring $39 billion to the Mozambican economy over the next 20 years and create over 700,000 jobs by 2035.

FIGURE 2. Sasol's Central Processing Facility close to Vilanculos, in operation since 2004.

© UN Environment

FIGURE 3. Port town of Pemba, Cabo Delgado Province, providing logistical and maritime support to offshore gas exploration since 2009.

© M Richmond

1.3 OVERVIEW OF THE UPSTREAM OIL AND GAS SECTOR

Oil and gas activities have varied significantly over the last two decades in Mozambique. Prior to 2009 there was drilling of production gas wells, construction of the CPF and installation of gas pipelines, all onshore. The 44 production wells that supply gas to the CPF operated by Sasol, were subjected to numerous environmental impact assessments (EIAs) that covered the initial seismic surveys, the construction of the plant itself, as well as numerous feeder and export pipelines.

Between 2000 and end of 2017 exploration intensified, with 138 wells drilled (see **Figure 4**), of which 74 were drilled in the Mozambique Basin (MB), all onshore. An additional 64 wells were drilled in northern Ruvuma Basin, almost all offshore. The total wells drilled at present stands at 222, of which only 44 are production wells, for gas, which are all located in the Inhambane province (INP, inp.gov.mz).

It was only in 2009 that the offshore exploration commenced in the Ruvuma Basin, peaking in 2013 with 18 wells drilled that year, and ceasing altogether in 2016. For these exploration wells, specific EIAs have also been commissioned, often including more than one well, with numerous EIAs for seismic surveys. Meanwhile, between 2012 and 2015, there was no drilling at all in the Mozambique Basin, but drilling has since resumed with six wells drilled in 2016 and eight wells in 2017. The variation in the resulting number and type of EIAs that accompany this erratic upstream development, presents unique challenges to regulators and the institutions involved in the sector.

Based on discussions with the representatives of the sector, it seems likely that the coming years will witness considerable activity in the oil and gas sector. This will include:

- development drilling in the Ruvuma Basin, accompanied by the construction and installation of one or two LNG facilities
- development drilling of light oil wells with feeder pipelines to a new processing plant under Sasol's expansion programme.
- seismic surveys and exploration drilling in the new exploration blocks on- and off-shore (**Figure 5**).

FIGURE 4. Recent well completion. Source: www.inp.gov.mz.

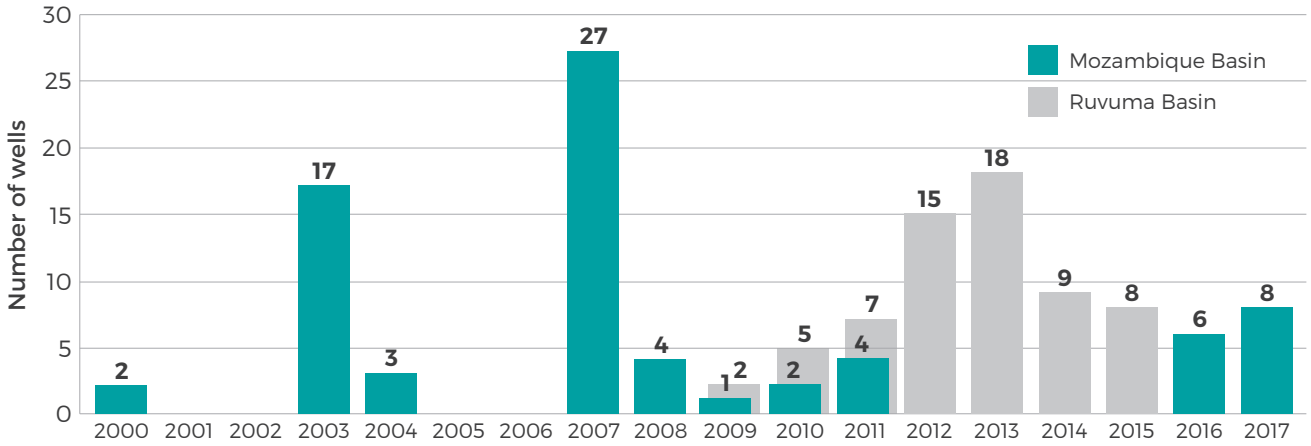
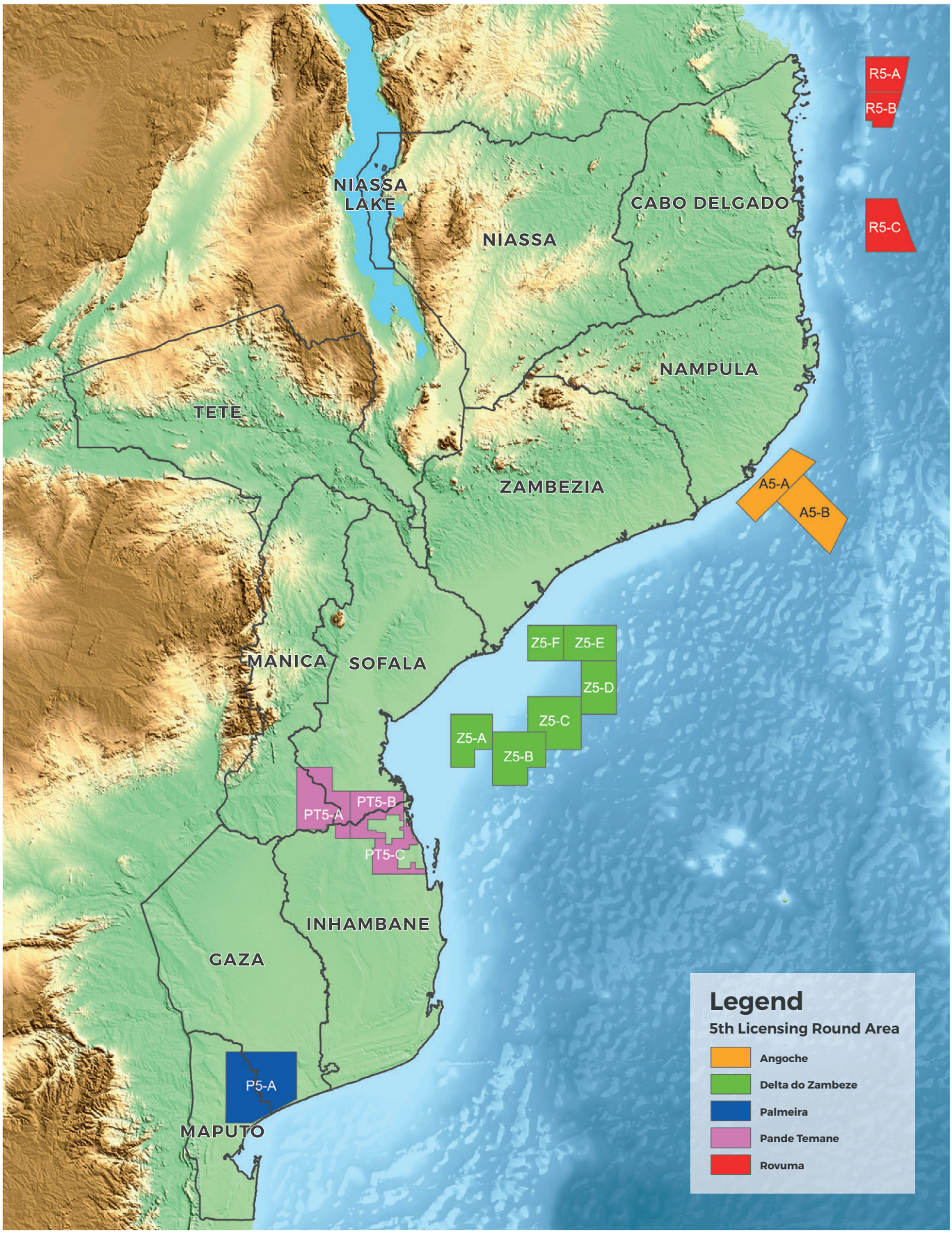


FIGURE 5. Results of the 5th licensing round. Source: www.inp.gov.mz.



1.4 SUPPORTING THE DEVELOPMENT OF THE OIL AND GAS SECTOR

1.4.1 FUTURE EXPECTATIONS

The intensity of exploration and production activities significantly affect the need for and capacities of the regulatory institutions. Mindful that there are many examples, including in Africa, where oil and gas production have led to environmental degradation, the Government of Mozambique is keen to ensure that the exploration, development and production activities associated with future oil and gas exploration and development apply environmental management best practices and support sustainable development. There are concerns that the rapid development of the gas sector, which is expected to further accelerate following the launch of LNG construction and production facilities, may place increased demand on the responsible Government institutions and their capacities to effectively manage environmental, social and governance issues associated with the sector. Several international development partners, including The World Bank, Agence Francaise de Développement (AFD), the Fonds Français pour l'Environnement Mondial (FFEM) and the Mava Foundation, as well as the Government of Norway's Oil for Development Programme (OfD), have extended support to the Government of Mozambique in managing its emerging oil and gas sector.

1.4.2 EXISTING INITIATIVES

There are two recent, important and directly-relevant studies that have also examined institutional and other challenges related to governance and institutional capacities in Mozambique. The first is the COMBO (COnservation, impact Mitigation and Biodiversity Offsets) Project[3] (2018) which focuses on conservation and impact mitigation to achieve a no net loss or a net gain of biodiversity (including through implementation of biodiversity offsets). It is a four-year project that aims to support the Government (principally the Administração Nacional das Áreas de Conservação (MITADER) [or National Administration of Conservation Areas] on elaborating regulations, technical guidelines, development planning and Strategic Environmental Assessments (SEAs). It also supports the national planning processes, works on relevant biodiversity metrics, baseline and monitoring methodology as well as supporting institutional, legal and financial mechanisms, the uptake of best practice, development of national capacity through training sessions and other means and activities.

The second publication (MIREME, 2017) is the Strategic Social and Environmental Assessment (SESA) prepared by the MAGTAP (Mining and Gas Technical Assistance Project) in 2017, which is supported by The World Bank and implemented through the Ministério do Recursos Minerais e Energia (MIREME) [or Ministry of Mineral Resources and Energy]. The SESA examines the environment, socio-economic, health, safety and security (ESHSS) regulations, policies, governance and decision-making with respect to the gas and mining sectors. Its objectives, as a policy tool, are to evaluate and prioritize cumulative impacts, identify gaps and overlaps in institutional mandates and regulations, and to propose measures to improve management of ESHSS issues in these two sectors.

Challenges and recommendations from these two studies mirror and/or add to those identified in this present capacity needs assessment (CNA) that is focused more specifically on environmental management issues in the upstream activities within the oil and gas sector.

1.4.3 PARTICIPATION OF THE OIL FOR DEVELOPMENT PROGRAMME

The Government of Norway has been providing petroleum related support to Mozambique for more than three decades, most recently through its OfD Programme. OfD is a global programme established in 2005 and presently covering 13 countries. The purpose is poverty reduction and sustainable development through responsible management of petroleum resources.

3 *Initiated by the Wildlife Conservations Society, Forest Trends and Biotope, and supported by the Agence Francaise de Développement (AFD), the Fonds Français pour l'Environnement Mondial (FFEM) and the Mava Foundation.*

The programme has four components, which together form a holistic approach to petroleum management. These components are finance, resource management, safety and environment. The main approach is support for capacity development through institutional collaboration, involving Norwegian public institutions working together with public institutions in partner countries. A new OfD Country Programme Phase for Mozambique is currently being developed.

UN Environment and the Government of Norway have a five-year collaboration (2016-2021) to enhance capacities for improved environmental management in the oil and gas sectors in countries supported by Norway's OfD Programme. Based on this collaboration, UN Environment aims to reduce environmental risks associated with development of hydrocarbon resources and provides technical assistance and capacity building to OfD countries, including Mozambique.

On behalf of the Government of Mozambique, UN Environment carried out an Institutional CNA for Strengthening Environmental Management in the Oil and Gas sector. The CNA was undertaken by UN Environment under the cooperation framework with Norway's OfD programme, and will contribute towards the country's long-term capacity development on environmental management in the petroleum sector.

2 PURPOSE AND OBJECTIVES OF THE CAPACITY NEEDS ASSESSMENT

As part of the CNA process, UN Environment, in collaboration with MITADER and MIREME, conducted face-to-face interviews with relevant Government institutions at national, provincial and district levels. Additional interviews with non-governmental actors, including from the private sector (oil/gas operators, EIA practitioners), civil society and universities were organized to support and triangulate data gathering on environmental management capacities of Government institutions in the oil and gas upstream sector in Mozambique.

The purpose of the CNA is to map the capacity needs of key Government Ministries, Departments and Agencies (MDAs) with respect to environmental management in the oil and gas sector. The CNA contributes to the development of a national "roadmap" that outlines the strategic capacity needs of Government institutions to strengthen environmental management in the oil and gas sector. This provides a basis for further designing the environmental component of the OfD Programme in Mozambique and supporting the Government in reaching out to other development partners.

The overall objectives of the CNA are:

1. To prepare an overview of the roles, responsibilities and capacities of key institutions and legal and regulatory frameworks which are relevant for managing environmental issues associated with the oil and gas industry;
2. To identify any gaps and overlapping institutional responsibilities with regard to managing the environmental impacts of the oil and gas sector, including with respect to international best practices to deal with the emerging challenges of managing oil and gas exploration and production related to environment;
3. To identify the key capacity building efforts needed to ensure effective environmental oversight and management of oil and gas exploration and production, and tackle current and future challenges; and,
4. To present the findings as an independent report to Government and key stakeholders so that coordinated action may be taken in a prioritized manner.

3 CAPACITY NEEDS ASSESSMENT METHODOLOGY

3.1 PHASE I: DESK REVIEW

The assessment started with a desk review of all available information on policies, legislation and information relevant to the oil and gas industry and environmental management. This process continued into the final reporting phase. Based on the background research conducted in Phase I, the key National Government institutions (ministries, departments/directorates, and agencies) were identified as the basis for gathering primary data.

3.2 PHASE II: AWARENESS-RAISING WORKSHOP AND DATA GATHERING

A half-day Awareness Raising workshop on the role of environmental management in the oil and gas sector was organized on 20 February 2018 by UN Environment to convene the major stakeholders involved in the CNA process. This event introduced and "kick-started" the CNA process, its objectives and scope and served to gather feedback from Government stakeholders. It also helped strengthen national awareness of environmental management considerations in oil and gas exploration and production. **Annex 1** provides details of the itinerary and schedule of the main activities that started in mid-March 2018.

A two-step approach was followed for primary data gathering:

Questionnaires

A survey questionnaire was prepared with the objective to collect the maximum quantitative information from the various institutions identified for the assessment. Key information gathered from each respective institution included:

- Policy and legislative mandates;
- Organisational structure;
- Institutional linkages;

FIGURE 6. UN Environment team conducting face-to-face structured interviews with MITADER staff, February 2018.

© UN Environment

- Number of staff assigned or with responsibilities in the oil and gas sector (including gender balance when available); and
- Resources (financial/technical/equipment) dedicated to the oil and gas sector.

The questionnaire was shared electronically and via an on-line platform with individuals within relevant institutions, after UN Environment's first country visit and as a follow-up to the face-to-face structured interviews. Eight fully-completed questionnaires were received, all from Government staff.

Structured Interviews

The UN Environment team conducted face-to-face structured interviews (see **Figure 6**) with Government institutions and carried out additional stakeholder consultations (with non-governmental organizations (NGOs)/ civil society, academia and the private sector) at national, provincial and local-level, and collected quantitative and qualitative information in the process.

During a two-week mission with UN Environment experts, and over the course of subsequent visits, representatives of 32 separate entities, including 22 Government institutions and nine non-government institutions, were consulted for structured interviews. These interviews focused on identifying environmental management capacity needs related to the development of the oil and gas sector in the country (see **Box 1**). Non-government entities were consulted to provide input regarding capacity needs in the sector based on their first-hand experience interacting with the relevant government institutions.

In total, 85 individuals either participated in CNA related activities or were consulted for face-to-face interviews. This included 64 representatives from Government institutions, including those that attended the kick-off introductory meeting and 21 non-government representatives. Most of the face-to-face interviews lasted between 1 hour and 1½ hours, based on a pre-designed set of topics for discussion. **Annex 2** provides the list of individuals and institutions met during the consultation visits. The information gathered from the interviews, meetings and questionnaires was reviewed to identify strengths as well as gaps in capacity needs within institutions and across institutions.

BOX 1. OBJECTIVES OF STRUCTURED INTERVIEWS

- To assess whether the essential components needed for environmental management in the oil and gas sector are in place, based on best practice principles of establishing sound environmental management systems; these include assessing whether each institution interviewed has:
  - **a)** Leadership/commitment
  - **b)** Institutional policies, guiding frameworks or strategies that promote/ support sound environmental management in oil and gas exploration and production
  - **c)** Environmental Management Plans/ Programmes relevant to supporting sound environmental management in oil and gas exploration and production
  - **d)** Availability of staff and resources
  - **e)** Internal reporting/compliance monitoring systems and arrangements
  - **f)** Internal and external coordination mechanisms/systems to support implementation of such policies/plans
  - **g)** Emergency preparedness/response responsibilities; and whether the human/technical/financial resources for emergency preparedness and response exist; and,
  - **h)** Periodic and systematic management reviews.
- To define lessons learned from Mozambique's experiences on environmental management in the oil and gas sector.
- To identify capacity gaps/challenges in the respective institutions regarding environmental management considerations in oil and gas exploration and production.
- To understand existing initiatives that may be addressing some of the perceived gaps/challenges.
- To discuss proposed solutions for addressing institutional capacity gaps/challenges.

3.3 PHASE III: FIELD VISITS AND OIL AND GAS FOUNDATION COURSE

A site visit to the Sasol gas production operations at the CPF took place on 26-27 February 2018; and a visit to the Mavoco industrial landfill was undertaken on 11 April 2018, as part of the national training course delivered for Mozambique on 'Oil and Gas Exploration and Production and Promoting Sound Environmental Management' on 10-13 April. The field visit to Mavoco involved UN Environment oil and gas experts. Where relevant, experts' feedback from the Mavoco field visit is incorporated into this CNA report. Discussion outcomes from the national training from Government were also noted and integrated into the CNA report, including issues of concern related to air emissions and waste management.

3.4 PHASE IV: VALIDATION WORKSHOP

UN Environment shared the Preliminary Report with the main stakeholders for feedback in early May 2018 at the National Validation Workshop where the key challenges and recommendations were examined, adjusted and consensus reached with respect to their validity (priority) and urgency (see **Annex 3** Validation of Key Challenges and Recommendations Matrix). Those stakeholders present at the Validation Workshop are indicated in the overall list of participants and institutions met (see **Annex 2**). One output of the workshop was the definition of "proposed actions" that relate to the main recommendations. These actions have now been incorporated as additional or "new" recommendations (included also in the **Annex 3** matrix).

3.5 FINAL REPORTING

The resulting key challenges are organized under the seven thematic areas in the following sections, accompanied by the main recommendations to address the identified challenges. Based on feedback and comments received, additional data was gathered by UN Environment to finalize the CNA report. The thematic areas examined and discussed in this report are:

1. Policies and legal frameworks related to oil and gas;
2. Institutional architecture for environmental management in the oil and gas sector;
3. Regulatory institutions: staffing, resources and technical capacity;
4. The EIA process for oil and gas projects;
5. Environmental data relevant to the oil and gas sector;
6. Emergency preparedness and response;
7. Chemicals and waste management.

4 KEY FINDINGS AND RESULTS

4.1 POLICIES AND LEGAL FRAMEWORKS RELATED TO OIL AND GAS

4.1.1 OVERVIEW

To ensure sound environmental management of the extractives sector, national governments create a range of legislation from Constitutional provisions to regulations and operating instructions. In Mozambique, as well as in many countries where the oil and gas industry has a disproportionate strategic importance, it is important that specific legislation is established that is geared especially towards the industry. Presence of such specific legislation implies that lawmakers have recognized the importance of the issue; therefore, it enables civil servants to use legislation as justification for seeking additional resources and political support to implement actions called for by legislation.

The assessment team conducted a brief review of all relevant legislation in Mozambique with reference to environmental management applicable to upstream activities in the oil and gas sector. It then compared the current legal status with what is considered international good practice based on experience in other petroleum-producing countries with well-established legal systems.

As can be seen from the list of legal structures (**Table 1**), Mozambique has a comprehensive legislative framework to support environmental management in the oil and gas sector. The main gaps pertain to:

- Establishment of SEA for the oil and gas (and other) sectors;
- Management of air emissions from oil and gas installations and during exploration;
- Soil management/pollution and noise pollution;
- Use of dispersants for oil spills; and
- Procedures for decommissioning.

With respect to environmental aspects of upstream activities there are 18 policies (**Table 1**) and at least 15 specific laws (with over 29 regulations) that are relevant (**Table 2**). Policies include the National Environment Policy, Conservation Policy, Resettlement Policy, and the Policy and Strategy of the Sea.

TABLE 1. Mozambique policies relevant to the oil and gas sector.

Thematic Area/Scope	Title of Policies related to environment and oil and gas in Mozambique	Year	Status
Oil Governance	National Policy and Strategy for Biofuels Resolution No.22	2009	In effect
	National Energy Policy	1998	In effect
	Mineral Resources Policy	2013	In effect
Environment/ Biophysical	National Environmental Policy	1995	In effect
	Policy for Territorial Planning Resolution 18	1997	In effect
	National Water Policy I National Water Policy II	1995 2007	Amended in 2007 In effect
	Conservation and strategy for implementation Policy	2009	Approved
	National Forestry and Wildlife Development Policy	1997	In effect
	Policy and Strategy of the Sea (POLMAR)	2017	In effect
Others (socio-economic, etc)	Resettlement Policy	2006	In effect
	Policy of Corporate Social Responsibility for the Extractive Industry of Mineral Resources Res. No.21	2014	In effect
	National Land Policy No.10	1995	Under Review
	Agricultural Policy and Implementation Strategy(PAEI)	1996	In effect
	National Tourism Policy and Implementation Strategy	2003	Adopted and In effect
	Cultural Policy	1997	In effect
	National Policy and Strategy for Decentralization	2012	In effect
	The National Health Policy Declaration	2007	In effect
Disaster Management	National Policy on Disaster Management	1999	In effect

TABLE 2. Mozambique legislation relevant to the oil and gas sector.

Typical legal provisions needed to support environmental management in the oil and gas sector, based on international best practice	Status	Full title of legal provision in Mozambique	Year of Enactment
Constitutional Provisions	A	Constitution of Mozambique	2004
Framework Environmental Act	R	Environmental Law No.20	1997
	A	Mining Law No.20	2014
Framework Oil and Gas Act	A	Petroleum Law, No 21.	2014
	A	Law for Offshore Areas Decree Law No.2	2014
	A	Mining Law No.20	2014
	A	Oil and Gas Upstream Operations Law No.21	2014
Framework on Water	A	Water Law No.16	1991
Framework Act on Disaster Management	A	Disaster Management Law No.15	2014
Framework on Land Use Planning	A	Land Law No.19	1997
	A	Territorial Planning Law No.19	2007
Framework on Land Acquisition	A	Land Law No.19	1997
	A	Technical Annex to the Land Law	2000
	A	Rural Land law	1998
Framework on Protected Areas	A	The Sea Act No.4	1996
	A	Cultural Heritage Law No.10	1988
	A	Forests and Wildlife Law No.10	1999
	A	Fisheries Law No.3	1990
	A	Biodiversity and Conservation Law, No. 16	2014

Legend:

Available A | Available but under review R | Not Available/in process of formulation NA

Typical legal provisions needed to support environmental management in the oil and gas sector, based on international best practice	Status	Full title of legal provision in Mozambique	Year of Enactment
Regulations on Environmental Impact Assessment (including resettlement)	A	Addressed under Petroleum Law	2014
	A	Environmental Regulations for Petroleum Operations Decree No.56	2010
	A	EIA Evaluation Process Regulations Decree No.54	2015
	A	Petroleum Operations Regulations ("New POR") Decree No.34	2015
	A	Regulation for Environmental Inspection Decree No.11	2006
	A	Regulation on the Resettlement Process Resulting from Economic Activities Decree No.31	2012
	A	Technical Directive on the Resettlement Plans Preparation and Implementation Process, Ministerial Resolution No. 156	2014
	A	Mining Law Regulations Decree No.31	2015
	A	Environmental Regulations for Mining Activities Decree No.26	2004
	A	Regulation on the Environmental Audit Process, Decree No. 25	2011
Regulations on Strategic Environmental Assessment	NA	Not addressed under Environmental Regulations for Petroleum Operations Decree No.56 of 2010	–
Regulations on Water Pollution	A	Water Quality regulation	
	A	Regulation for the Prevention of Pollution and Marine and Coastal Environmental Protection Decree No.45	2004 2006
Regulations on Waste Management	A	Regulation on the Management of Hazardous Waste Decree No. 83	2014
	A	Regulation of Environmental Inspection Decree No. 11	2006
	A	Regulation for the Management of Urban Solid Waste Management, Decree No. 94	2014

Typical legal provisions needed to support environmental management in the oil and gas sector, based on international best practice	Status	Full title of legal provision in Mozambique	Year of Enactment
Regulations on Petroleum Management	A	Petroleum Operations Regulations Decree No.34	2015
	A	Environmental Regulation for Petroleum Operations Decree No.56	2010
	A	Regulation on the Importation and Marketing of Petroleum Products Decree No.45	2012
Regulations on Chemicals Management	A	Regulation on the Management of Hazardous Waste Decree No. 83	2014
Regulations on Soil Management/Pollution	NA	No specific regulation in Mozambique but addressed under Regulation for Waste Management	
	A	Regulation on Environmental Quality and Effluents' Emissions Decree No. 18; Decree No. 67	2004 (Amended 2010)
	A	Environmental Law No.20	1997
	R	Mines Regulation	1979
Regulations on Air Pollution	A	Emissions addressed under Petroleum Regulations	2015
	A	Regulation on Environmental Quality and Effluents' Emissions Decree No.18; Decree No. 67	2004 (Amended 2010)
Regulations on Carbon Dioxide Emissions	A	Addressed under Regulation of Environmental Quality Standards and Effluents' Emissions Decree No.18; Decree No. 67	2004 (Amended 2010)
Regulations on Noise Pollution	NA	No specific regulation in Mozambique but addressed under Regulation on Environmental Quality and Effluents' Emissions Decree No.18; Decree No. 67	2004 (Amended 2010)
Regulations on Oil Spill Management	A	Regulation for the Prevention of Pollution and Marine and Coastal Environmental Protection Decree No.45	2006
Regulations on Decommissioning of Oil and Gas infrastructure	NA	No specific regulation in Mozambique	–

Legend:

Available A | Available but under review R | Not Available/in process of formulation NA

Typical legal provisions needed to support environmental management in the oil and gas sector, based on international best practice	Status	Full title of legal provision in Mozambique	Year of Enactment
Regulations on Operating within Protected Areas	A	Addressed under Hunting Regulations No.2642	1965
	A	Regulation for the Prevention of Pollution and Marine and Coastal Environmental Protection Decree No.45	2006
	A	Regulation for the Forest and Wildlife Law, Decree No. 12	2002
	A	Addressed under Conservation Law No. 16	2014
Rules on Produced Water Disposal	A	Addressed under the Regulations on Waste Management Decree No.13	2006
	A	Addressed under the Regulations of Environmental Quality Standards and Effluents' Emission Decree No.18; Decree No.67	2004 (Amended 2010)
	A	Regulation for the Prevention of Pollution and Marine and Coastal Environmental Protection Decree No.45	2006
Rules on Drill Cuttings Disposal	A	Addressed under the Petroleum Operations Regulations and Petroleum Law	2015 2014
	A	Licensing Regulations for Petroleum Installations and Activities Decree No.272	2009
Rules on Use of Radioactive Sources in oil industry	A	Addressed under the Mining Safety Regulation (for Technical Safety and Health for Geological and Mining Activities)	2006
	A	Regulation regarding the Management of Substance that Destroy the Ozone Layer No.78	2009
Rules on Community Consultations	A	Addressed under the Petroleum Operations Regulations	2015
	A	Procedures for Community Consultations(Ministerial Diploma)	2011
Rules on Use of Dispersants	NA	No guidelines on use of dispersants in Mozambique; it is governed by Maritime Law and Environmental Law	–
Rules on Disposal of Disaster Wastes/Debris Management	R	Addressed under the Regulation on Waste Management Decree No.13	2006

Typical legal provisions needed to support environmental management in the oil and gas sector, based on international best practice	Status	Full title of legal provision in Mozambique	Year of Enactment
Environmental Quality Standards for Water	A	Addressed under the Regulations of Environmental Quality Standards and Effluents' Emission Decree No.18; Decree No.67	2004 (Amended 2010)
Environmental Quality Standards for Air	A	Addressed under the Regulations of Environmental Quality Standards and Effluents' Emission Decree No.18; Decree No.67	2004 (Amended 2010)
Environmental Quality Standards for Soil	A	Addressed under the Regulations of Environmental Quality Standards and Effluents' Emission Decree No.18; Decree No.67	2004 (Amended 2010)
	A	Land Law Regulation Decree No.68	1998
	A	Regulation of the Land Law Decree No.66	1998

Legend:

Available A | Available but under review R | Not Available/in process of formulation NA

Among the above legislation, there are nine principal items (laws and regulations) that are binding to most development activities in the oil and gas sector in Mozambique (described more fully in **Annex 4**). Based on the brief review of the main legal documents, it is clear that most aspects related to the environment (including marine pollution and conservation) and worker's conditions with respect to upstream activities are covered, at least in principle.

However, there is also wide recognition that as the Oil and gas industry is still relatively new in Mozambique, despite over ten years of activity by Sasol in Inhambane, it is inevitable that many pieces of legislation require updating. A case in point is the issue of decommissioning, addressed in more details in **Section 4.4.5**.

Mozambique is also signatory to over 30 international Conventions that are relevant to upstream oil and gas activities, on topics ranging from environment, climate change, hazardous waste, heritage sites, marine-based activities (including the environment, shipping, pollution, health and safety), labour and human rights. Adherence to the conditions and guidance provided in these Conventions by oil and gas companies should help conservation of the natural environment and associated livelihoods, in the instances where specific legislation is lacking. Equally, there is onus on the Government to develop the policies and laws to implement the commitments made under the Conventions.

4.1.2 LEGISLATION GAPS AND CHALLENGES OF IMPLEMENTATION

■ **Key Challenge 1:**
Incomplete and/or inconsistent legislation relating to oil and gas aspects

The above was suggested by nine of the 28 entities interviewed as it affects a number of areas within upstream activities. Although there is reference to "good international practices" and alignment with Conventions, there is an absence of specific details, such as permissible levels of discharge of certain contaminants, that need to be included in future regulations, aligned with international standards. Many of the companies are relying on international standards where national legislation is either weak or absent in order to meet financial lender requirements such as those set by the International Finance Corporation (IFC). The need to strengthen national legislation and implement it more thoroughly was raised by industry and the private sector and stressed as a key challenge by national institutions. However, the potential disadvantages (and concern) of having very prescriptive laws was raised by the private sector, in terms of the potential for misalignment with international standards. The need for dialogue between the Government and the private sector was also stressed as being important for streamlining the development of effective legislation.

According to interviewees, there was consensus that the legislation, even if lacking in some aspects, is generally comprehensive and, in some instances, very effective (e.g. the Conservation Law does in practice safeguard protected areas from oil and gas and activities). Furthermore, an update from the Government specifically on guidelines for drilling waste and produced water is planned to accompany the new legislation. However, other areas of jurisdiction and/or operations are inadequately covered at present. Examples cited where there was weak (i.e. lacking in detail) legislation relate to the marine environment, particularly relevant to offshore oil and gas operations, on provisions for migratory species and important biodiversity outside of protected areas. There is some concern that many socio-economic aspects, other than resettlement regulations, are also weakly covered.

The practical reach of the relatively new provisions, such as the Petroleum Law, will not be fully known until specific guidelines applicable to the natural gas projects are approved by decree. Verification is needed on the latest oil and gas regulations, and it is important to establish the status of relevant legislation in preparation or under review.

Although many items of legislation include elements relevant to the oil and gas industry, on some important items, such as fees, there is are important differences. For example, in the amount required by oil and gas companies to pay to the Government for the EIA process, depending on whether the company follows legislation under the Instituto Nacional de Petróleo (INP) [or National Institute of Petroleum] or under MITADER. There is a lack of alignment between EIA regulations and regulation of petroleum institutions. This particular example was cited numerous times during the CNA study. The MAGTAP (MIREME, 2017) also identified the need for the review and update of legislation with respect to the oil and gas sector. In light of likely future development in the sector, a series or important recommendations are made.

Recommendations: (a) Conduct a comprehensive review of legislation and where necessary update relevant legislation to include oil and gas aspects. Focus includes addressing inconsistencies and omissions, air emissions from oil and gas production and exploration, regulations for soil management/pollution, noise pollution, rules on use of dispersants for oil spills and decommissioning; (b) Develop awareness of oil and gas among legislators and technical knowledge among the MDAs who provide the information to legislators when they develop and discuss legislation.

There was consensus among respondents that the implementation of some areas of legislation has been slow; and the capacity among state actors is generally weak (see LANDac, 2016).

■ **Key Challenge 2:**
Inconsistent implementation of legislation (including mandates)

Recommendations: (a) Examine and address reasons for discrepancies and failures to implement legislation relevant to oil and gas activities. (b) Address overlapping institutional mandates as well as gaps between the various entities, specific to environmental aspects of the oil and gas sector.

4.1.3 STRATEGIC SECTOR PLANNING

■ **Key Challenge 3:**
Unclear legislation to conduct SESA/SEA relating to oil and gas

EIAs identify the key environmental issues associated with proposed oil and gas activities[4], but they are generally limited to the technical and operational issues at the project level. Increasingly, SEAs or, as preferred under the MAGTAP, the SESAs, are prepared by Governments to guide the development of oil and gas sector activities, as well as other sectors, in a format that includes cross-sectoral alignment on diverse development issues. SEAs consider broader social and environmental impacts, which are often excluded from the in-depth analysis of individual project-specific EIAs and are generally carried out at a broader scale to assess landscape and seascape level impacts which are direct, indirect and/or cumulative.

There is currently no legal requirement for SEA within the environmental or sectoral laws in Mozambique, although a number of them have been carried out, including the SESA under the MAGTAP for mining and gas (MIREME, 2017), for which an action plan was recently launched, in June 2018. This is an important and positive development with wide-ranging repercussions on the development of oil and gas in Mozambique (as described in **Section 1.4.2**), but the legal requirement, process and mechanisms for development of SEAs and their implementation remain unclear.

Recommendation: Examine the final legal outcome resulting from the MIREME (2017) SESA process with a view to consider developing legislation for undertaking SESAs/SEAs in the country.

4 *It is important to note that EIAs for the development (production) phase are yet to be completed, at least for some of the concession blocks.*

4.1.4 EMISSIONS AND FLARING OF GAS

As stated in the new Petroleum Operations Regulation Decree 34/2015, the flaring of natural gas is now subject to authorisation or notification to the INP within 24 hours whether for testing or in case of emergency. Thus, the volumes of approved gas emitted can in practice be documented and form an important component of the environmental datasets discussed later (see **Section 4.5**).

■ **Key Challenge 4:**
Undocumented gas flaring and fugitive emissions

During the February 2018 face-to-face interviews, the topic of emissions was a focus area, with respondents confirming that there were no specific limits on emissions and that operators are supposed to follow IFC standards, with details to be included in the EIA for that specific activity. The Petroleum Operations Regulation provides that the operator must monitor and reduce the effect of all operational and accidental discharge, handling of waste and pollution emissions into the air, sea, lakes, rivers, and soil. Discharges must be within the limits defined, though there is no testing or monitoring of emissions; respondents therefore felt that the 2015 legislation needed updating.

Regulating and monitoring methane emissions were also later highlighted as a key challenge by participants at the oil and gas national training conducted in April. Internationally, there is increasing concern that, despite its short lifetime in the atmosphere (ca. 12 years), methane is a significant contributor to climate change (see IPIECA, 2015). The oil and gas supply chain (e.g. production, processing, transmission and distribution) accounts for around 20% of anthropogenic methane emissions, according to the US Environmental Protection Agency, as described by IPECA (2015). Consequently, there are increasing efforts worldwide to document all methane emissions (flaring and other) and to monitor these emissions more closely. In Mozambique, it is timely that flaring emissions are now to be monitored and the Government may also consider development of procedures to document and report on air emissions, including from testing or verification of the installations or for safety reasons.

Recommendation: Examine the new Petroleum Regulations and determine the most appropriate means to document volumes and types of gases flared and fugitive emissions.

4.2 INSTITUTIONAL ARCHITECTURE FOR ENVIRONMENTAL MANAGEMENT IN THE OIL AND GAS SECTOR

4.2.1 OVERVIEW

Supporting the legislative and regulatory frameworks is the institutional architecture which is created by these laws and which have the mandate to enforce laws. The institutional architecture for environmental management in the oil and gas sector at the national level is presented in the Figure 7 below. These institutions (Ministries, Department and Agencies) have been identified by MITADER as having important roles in supporting environmental management in the oil and gas sector. The institutional review and interviews conducted by UN Environment also validated this listing of Ministries, Agencies and relevant Departments.

The following eight are the principal ministries (with local acronyms) involved with environmental aspects of upstream oil and gas activities in Mozambique:

- Ministry of Land, Environment and Rural Development (MITADER)
- Ministry of Mineral Resources and Energy (MIREME)
- Ministry of Sea, Inland Waters and Fisheries (MIMAIP)
- Ministry of Transports and Communications (MTC)
- Ministry of Industry and Commerce (MIC)
- Ministry of Culture and Tourism (MICULTUR)
- Ministry of Gender, Child and Social Action (MGCAS)
- Ministry of Health (MISAU)

When assessing the institutional architecture, UN Environment concluded that there is a strong institutional framework in Mozambique to address issues relating to environmental management in the oil and gas sector. Under the current administration, the Government has made achieving LNG gas production by 2023 a national priority. All institutions that were interviewed demonstrated awareness of the Government's targets and are cognizant of the potential challenges this national priority brings to their respective institutions.

MITADER is the principal entity responsible for the EIA process in Mozambique. It was created after the 2014 general elections, when a new government structure was formed in February 2015, and it has completely integrated the former Ministry for the Coordination of Environmental Affairs (Ministério para a Coordenação da Acção Ambiental – MICOA). In addition to MITADER and INP (under MIREME), the Instituto Nacional da Marinha INAMAR [or National Naval Institute], as the principal maritime authority, is directly relevant for offshore activities including all aspects related to preventing, controlling and responding to marine pollution.

An overview of the roles and responsibilities of key institutions is provided in **Annex 5**, from where at least 18 institutions (departments and/or directorates), from eight principal ministries, are identified as having some role in the licensing, regulating or monitoring of environmental (and social) aspects of upstream oil and gas activities (**Figure 7**).

Within MITADER, the Direcção Nacional do Ambiente (DINAB) [or National Directorate of Environment], is responsible for the EIA procedure, with a sub-department known as the Divisão de Licenciamento Ambiental (DLA) [or Department of Environmental Licensing] dedicated to licensing of EIAs. All these entities are staffed by experienced technicians, at one of the many offices in Maputo (**Figure 8**). In addition, there are other departments, such as the Department of Environmental Management, with experienced technicians that also participate in the EIA process.

FIGURE 7. Institutional architecture for environmental management in the oil and gas sector in Mozambique, represented by eight principal ministries (shaded) with various agencies and directorates.
See List of Acronyms for full titles of the MDAs.

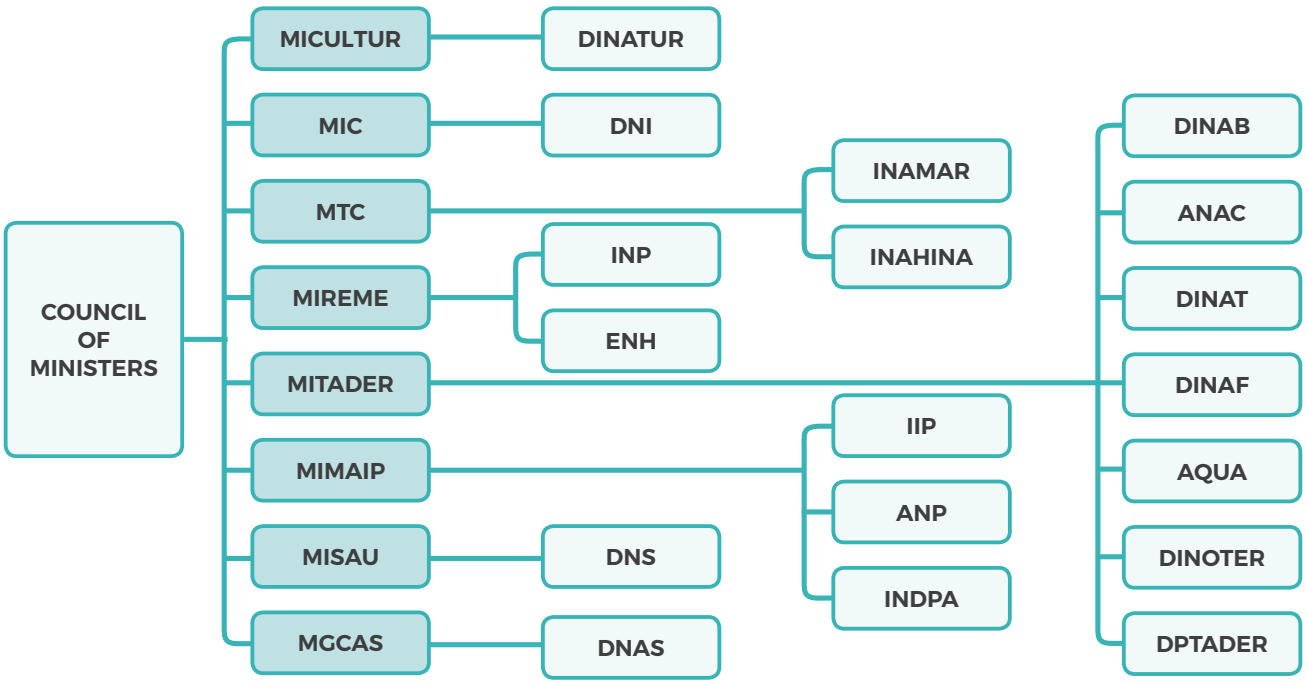


FIGURE 8. MITADER headquarters, Avenida Josina Machel, Maputo, one of eight sets of offices, housing three other entities (related to cadastral services and mapping, and forestry).

© UN Environment

4.2.2 INSTITUTIONAL PROFILES AND MANDATES

■ **Key Challenge 5:**
Overlapping and unclear institutional mandates leading to inefficiencies and operational delays

One feature of some of the institutions interviewed (e.g. Agência Nacional para o Controlo de Qualidade Ambiental (AQUA) [or National Agency of Environmental Quality Control] and the Instituto de Investigações Pesqueiras (IIP) [or Fisheries Research Institute]) is the recent, and in some cases on-going internal re-structuring. This continues to result in delayed definition of policies and mandates. Respondents felt that the higher-level strategies for individual Government entities on how to engage with the oil and gas sector are not always clearly defined and/or systematically implemented at the technical level.

Many entities interviewed indicated that there was a need for alignment of relevant institutional mandates, policies and strategies. This relates especially to environmental monitoring. As AQUA is building capacity to carry out its monitoring mandate, there is a lack of clarity over the respective jurisdiction of Inspecção da Terra, Ambiente e Desenvolvimento Rural (ITADER) [or Inspectorate of Land, Environment and Rural Development], and AQUA. In addition, the specific needs of monitoring, including inspections visits and sampling, require corresponding equipment and budgets.

The same issue applies to conflicting mandates between MITADER and INP with regards to undertaking environmental compliance inspections, which was emphasized by operators. Related to this is the apparent preference by operators to deal with INP rather than MITADER, contrary to the legislation, due to a greater understanding amongst INP staff of the industry.

In addition to clarifying roles and responsibilities within MITADER, there is a need to review and align the often unclear division of roles and responsibilities between District, Provincial and National Government regarding the monitoring of implementation of Environmental Management or Monitoring Plans (EMPs). This was also stressed by the MAGTAP (MIREME, 2017) and by the Instituto Nacional de Gestão de Calamidades (INGC), (or National Institute of Disaster Management), with respect to emergency preparedness and response (see **Section 4.6**). It was also noted that between MITADER and the

Ministério do Mar, Aguas Interiores e Pescas (MIMAIP) [or Ministry of Sea, Inland Waters and Fisheries], there are unclear areas of jurisdiction, with respect to marine and coastal habitats and protected areas within these.

This lack of clarity of institutional mandates can lead to severe duplication of efforts, further confounding the capacity constraints of all institutions concerned. It also leads to delays in processes such as the EIA review, compliance inspections and monitoring, with consequential delays in operations and budget implications.

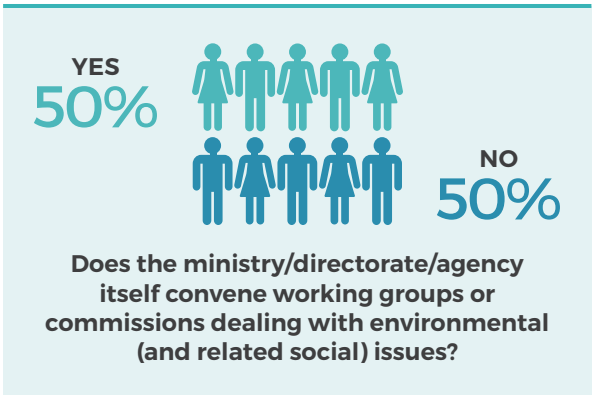
Recommendation: Examine and contrast mandates of relevant institutions to resolve inconsistencies, including those related to environmental monitoring.

4.2.3 COORDINATION AND COMMUNICATION ON OIL AND GAS ISSUES

■ **Key Challenge 6:**
Unclear (and weak) coordination mechanisms for technical exchange on environmental issues

Nine of the 28 entities interviewed felt there was weak communication between central and provincial offices, and that there is a need to establish a formal platform for coordination, including working groups or commissions. Half of those completing the questionnaire agreed (**Figure 9**). Whereas such a platform exists for specific EIA approval processes and social issues, there is no standing committee for the coordination of cross-cutting issues related to environment and the oil and gas sector. Better coordination and functional alignment are needed across different institutions and different levels of Government, between national level monitoring, compliance and inspection institutions, including at regional/provincial and district levels. This challenge seems to be particularly relevant to entities within MITADER.

FIGURE 9. Working groups or commissions to address environmental and social issues related to oil and gas sector in Mozambique.
Source: CNA Questionnaire (completed by eight respondents).



As the state-owned oil and gas operator, ENH receives adequate information on environmental issues associated with specific oil and gas activities, but that does not apply to all Government departments who should be involved. If such a coordination mechanism were to be established, it is critical to ensure shared ownership between key institutions, including MITADER and MIREME. Part of the reason why such a platform does not exist is due to the recent institutional restructuring processes that occurred in the Ministries, with formal coordination mechanisms not yet in place, as suggested by the COMBO Project (2018).

Although not mentioned in the interviews thus far conducted, the findings from the COMBO Project (2018) included recognition of the important role of the environmental department of the Attorneys General's Office (AGO), particularly with respect to the EIA process. In addition to the potential roles of the AGO, one positive aspect mentioned by several institutions during the COMBO Project (2018) study was the existence of inter-ministerial teams established to produce a harmonized response to documents, in particular the EIA technical review committee, the Commisão Têcnico de Avaliação (CTA) in the case of the EIA process. Whether such a mechanism still exists is not clear but deserves more investigation, as potential lessons could be learnt. The COMBO Project (2018) further noted that project-specific inter-ministerial coordination has been improving over the last few years, particularly regarding mega-projects, and that the role of the National Council for Sustainable Development (CONDES) – now partly inactive – should be revisited, or a new one established.

For higher-level, strategic planning and coordination, an inter-sectoral or inter-ministerial body to specifically address oil and gas issues, as typically defined by an SEA of the sector, is seen as one option for ensuring the wider engagement within Government. Suggestions were made for a two-tiered system comprised of a higher level strategic body (Directors or Cabinet level ministers, policymakers mainly) and the technical advisory group (senior technical officers of each key MDAs). This structure would serve for discussion and approval in the first instance, of documents relevant to the oil and gas sector. One possibility for consideration would be to strengthen the Conselho Nacional para o Desenvolvimento Sustentável (CONDES) [National Council for Sustainable Development]. Determining which approach or mechanism is most appropriate for Mozambique is part of the above challenge. Three recommendations emerge from the analysis.

Recommendations: (a) Review and determine the most appropriate mechanism for higher-level strategic planning and coordination of oil and gas issues, mindful that Government institutions are represented at both national and sub-national/provincial level; (b) Establish a technical advisory organ/council for oil and gas where stakeholders (Government institutions and other interested parties) can obtain and share information at technical level, with coordinated actions. Such a multi-institutional coordination mechanism, would need to have clearly defined terms of reference (ToRs) with proposed workplans and monitoring framework, and a legal mandate given from a higher level body; and (c) Using the platform created (above) develop mechanisms to share information between institutions through designated focal points and with the wider public.

4.3 REGULATORY INSTITUTIONS: STAFFING, RESOURCES AND TECHNICAL CAPACITY

4.3.1 OVERVIEW

The demand for environmental management of oil and gas activities has been erratic over the last decade (as described in **Section 1.2**), yet the regulators have succeeded in completing reviews of impact assessments, followed compliance monitoring and appraised audits. This was achieved despite most institutions interviewed agreeing that staff levels in general were not appropriate for the mandated tasks, resulting in some departments being overwhelmed with projects. One over-riding challenge is having the ability to respond to the fluctuations in the oil and gas activities that demand the attention of many institutions, particularly MITADER. A second main challenge is the reportedly inadequate remuneration of staff at many of the environmental institutions mandated to manage environmental aspects of the oil and gas sector. The sentiment expressed through our interviews is that low salaries can lead to a high turnover of staff within MITADER and, importantly, a loss of those trained in oil and gas related issues.

In addition, in some cases, the institutions have themselves only recently been established, often as modified versions of previous entities. MITADER, for example, includes all of the previous roles of the environmental regulator and Ministry for environmental coordination, formerly known as MICOA. However, the transition of mandates to new divisions is not always clear (see **Section 4.2.2**), and the staffing and budgets have yet to be aligned with the new structures. One positive area is gender balance within Government institutions, where an even split was reported though the CNA questionnaires (**Figure 10**).

4.3.2 TECHNICAL CAPACITY

■ **Key Challenge 7:**
Gaps in technical capacity related to oil and gas within relevant institutions

This challenge was identified by 24 of the 28 entities interviewed in the present study, with the suggestion that capacity building efforts should have both short-term and long-term objectives and use a range of training approaches and programmes to achieve this (short/long, monthly, intermittent, annual, etc.).

None of the environmental MDAs have dedicated oil and gas teams or units, though some have benefited from ad hoc training related to the oil and gas industry. The general consensus amongst respondents is that not enough institutions involved in the oil and gas industry receive adequate training (**Figure 11**) and that they require support to improve their technical understanding, particularly of environmental issues across the oil and gas life cycle. This includes the various phases of exploration, from seismic surveys to development drilling and pipeline installations and monitoring of air emissions. Two thirds of survey respondents further agreed that there is a lack of additional training, specifically on environmental and social management related to the oil and gas sector (**Figure 12**).

According to similar interviews performed by the COMBO Project (2018), the total number of technicians dedicated to EIA licensing and other environmental issues is around 145 (with numbers per institution varying from 1 and 36). In addition, Provincial and District departments have dedicated staff, leading to a total of 200 to 250. This provides some indication of the potential number of individuals that might be targeted for capacity strengthening. Improving institutional technical capacity was also a recommendation identified by the MAGTAP (MIREME, 2017).

Proposed methods to implement capacity development are diverse. Options include intense weekly or intermittent continuous specialist courses, to overseas training and in-house placements of experts. Also included are support for development of specialist technical groups at the Ministerial levels, development of manuals and guidelines, to the incorporation of relevant technical aspects in academic courses. It is important that training and capacity building exercises are continuous to accommodate not only the high turn-over of staff at Government institutions, but also the advances in technical understanding of environmental and associated topics. Training needs to keep abreast of changes in technology used in the industry, of evolving legislation and international best practices around environmental management.

FIGURE 10. Gender balance within institutions involved in the oil and gas sector in Mozambique.
Source: CNA Questionnaire (completed by eight respondents).

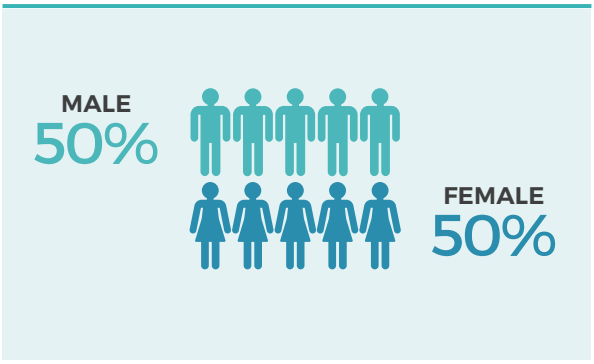


FIGURE 11. Training specifically in oil and gas exploration and production sector in Mozambique.
Source: CNA Questionnaire (completed by eight respondents).

Target audiences for technical training and/or support potentially include personnel within MITADER and its departments (AQUA, DINAB, ITADER), as well as in other agencies, such as INAMAR, INP/ENH, IIP, and District and Provincial staff. In particular, Government stakeholders identified DINAB as a key institution needing such assistance. It is important to include District level staff in capacity building and training activities, because these individuals are often more closely involved in project implementation, notably through their involvement with local communities and understanding of local conditions.. Finally, to boost capacity of Government regulatory authorities and support informed civil society engagement with the issues, the inclusion of civil society in capacity building (e.g. NGOs engaged with local communities) was indicated as important.

Both the MAGTAP (MIREME, 2017) and the COMBO Project (2018) study stressed the need to address shortcomings in the EIA process, thoroughness and the capacity to define and address cumulative impacts, especially in and around protected areas. Emphasis needs to be on best practice.

FIGURE 12. Training in environmental and social issues related to oil and gas sector in Mozambique.
Source: CNA Questionnaire (completed by eight respondents).

Has the Ministry/Directorate/Agency received additional training on environmental (and social related) management issues?

Recommendation: Examine needs and means to improve technical capacity within relevant institutions, especially DINAB as the leading environmental regulatory agency. Examples include provision of specialised courses on environmental issues important for managing the oil and gas sector, as well as strategic level planning, use of environmental data and compliance monitoring, etc.

4.3.3 FINANCIAL AND MATERIAL RESOURCES

■ **Key Challenge 8:**
Inadequate funding for EIA reviews and compliance monitoring at all levels

A challenge identified by 11 of the 28 entities interviewed, was the need to develop a policy for distribution of budget allocations that are commensurate to resource requirements of the EIA process and associated compliance monitoring needs. It was indicated that there has been an increase in the mandates reflected by the volume of EIAs for oil and gas activities, which have not been accompanied by the commensurate increase in funding within MITADER. The budget shortfall represents a major challenge.

A budget is needed at national, provincial and district levels in light of the development of the oil and gas sector, aligned with materials and equipment needed to meet the EIA and compliance monitoring requirements and engagement with project affected people (PAPs). The source of funding proposed by several entities was through allocation of shares from the environmental licensing fees.

In the case of AQUA, the goal of establishing monitoring centres/facilities in all provinces, from the current facilities in three provinces, can only be achieved with significant injections of funds, as reflected by questionnaire participants (**Figure 13**). The need for a review and adjustment of costs for monitoring and operational support (office, transport, etc.) was also stressed by MITADER, particularly with respect to DINAB's activities. As described in **Section 4.2.2** above, the specific equipment needed to conduct monitoring and/or inspection visits needs to be matched by appropriate funds.

FIGURE 13. Financial resources to address environmental and social issues related to oil and gas sector in Mozambique.
Source: CNA Questionnaire (completed by eight respondents).

It should also be noted, however, that there are needs for staff, capacity and resources to implement effective project planning prior to an EIA being conducted that would require an alternative source of revenue. To date, donor funds such as that provided under the MAGTAP (MIREME, 2017) which supported the SESA are filling this need, but the long-term budget allocation for pre-project screening needs to be considered.

Recommendation: Review funding requirements, and funding sources, for EIA and compliance monitoring, including inspection visits and project planning, and mobilise environmental licensing fees to support environmental monitoring and evaluations, especially by DINAB.

■ **Key Challenge 9:**
Weak motivation among personnel

At DINAB's DLA, the environmental licensing department, the staff are sometimes overwhelmed with the volume of EIA reports and lack of resources for their review. Four entities interviewed confirmed that there was a need to review and adjust MITADER staff requirements to adequately respond to the development of the oil and gas sector. This was also highlighted by ITADER, DINOTER and INP, where staffing does not meet the requirements of their respective mandates. Further, not only is there a lack of staff, but high turnover rates result in the constant need for training of new staff. During the Validation Workshop, the consensus was that there were skilled staff but they are misplaced and mismanaged. A better distribution of staff, to increase efficiency, was deemed necessary.

One reason proposed for the observed high turn-over of personnel is the low salary scales paid to MITADER staff, relative to private sector compensation; and that the payment fees for CTA attendance were not always forthcoming. As suggested by seven entities interviewed, creating better financial and career development incentives for Government staff is critical. Secondments and assisted salaries might be mechanisms to retain qualified Government staff and should be considered as part of a long-term capacity building programme. This challenge was also confirmed by all private sector entities interviewed.

Recommendations: Review staffing and qualifications needed to match mandated management tasks, redistribute technical staff according to mandated tasks, with commensurate salary scales, and ensure payment of the fee for attendance of CTA for EIA review.

4.4 THE EIA PROCESS FOR OIL AND GAS PROJECTS

4.4.1 OVERVIEW

Under current legislation, the proponent initiates the EIA process by registering the project with MITADER, and the nationally-approved EIA consultants begin preparing the Estudo de Pre-avaliação e Definição de Âmbito (EPDA) (or Scoping Report) and draft Terms of Reference (ToR) (**Figure 14**). Once the latter are approved by the CTA, with the help of Specialist Reviewers, the proponent and EIA consultants continue with the preparation of the EIA report itself, including the EMP, following the prescribed contents. These are reviewed and approved by the technical committee with the help of Specialist Reviewers, after which the Environmental Licence is issued.

The requirements for the EIA depend on the nature of the oil and gas operations, including the scope of the operation and the relative complexity of processes, equipment, impacts and other aspects. Most upstream activities fall into **category A+**, although pipelines are included in **category A** (see **Box 2**).

The EIA, including the EMP, and a special report from an independently-contracted group of Specialist Reviewers (see **Box 2**), are scrutinized by MITADER and MIREME as part of the process of approving the proposed activity or project. If all is in order, a project-specific environment licence is granted. The EIA must be undertaken by an environmental specialist licensed by MITADER.

4.4.2 REVIEW, APPROVAL AND DISSEMINATION OF EIAS

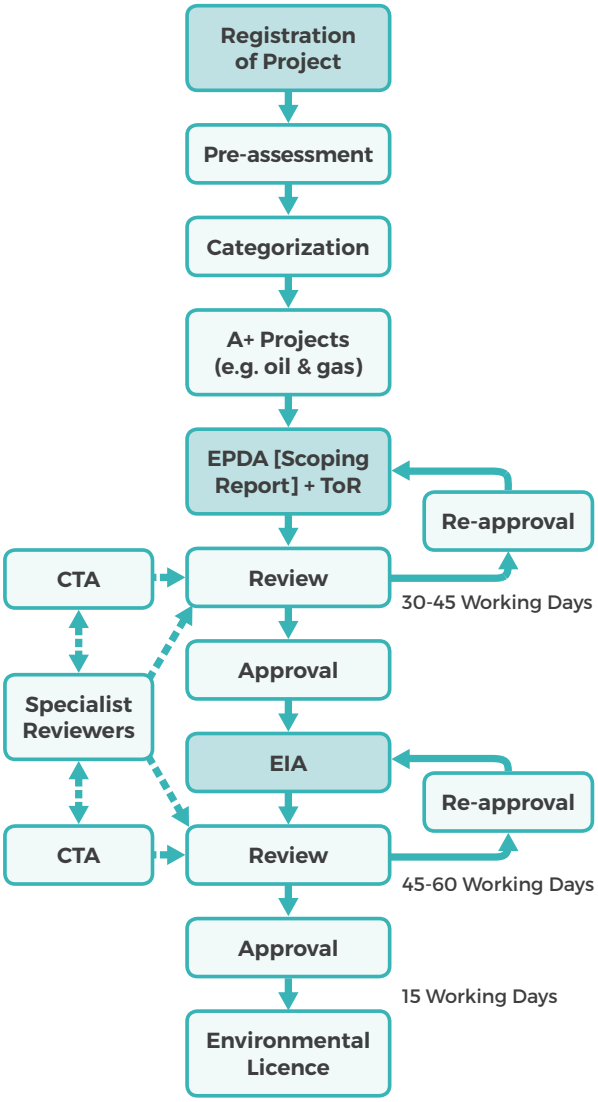
There are two focus areas concerning the EIA review process: the institutions involved (and coordination of their participation) and the personnel within those institutions. Many of the interviewed entities confirmed that in general there appears to be good institutional awareness for environmental issues and the EIA process in particular. Whereas the general EIA process and environmental issues are well understood, most entities interviewed professed to having little to no knowledge of specific environmental issues related to the oil and gas lifecycle (see **Section 4.3.2**). While MITADER relies on INP for technical guidance, INP refers back to MITADER for environmental expertise, and neither entity ultimately feels fully responsible for final environmental due diligence in the context of oil and gas projects.

As mentioned above, DINAB has long experience in handling environmental issues and is staffed by experienced technicians. However, at times the department is overwhelmed with the volume of documents to process. One shortcoming that was highlighted is the lack of coordination between institutions during the EIA review process, and that there is no permanent coordination committee, but rather only ad hoc committees for specific projects.

As seen in the EIA process (**Figure 14**) there are two instances that call for review of the documents: the Scoping Report and the final EIA report itself. The CTA reviews the Scoping Report and EIA, assisted by a group of Specialist Reviewers, contracted for the task (see **Box 2**). For the successful completion of the review process, two components are required: coordination of the actual review (currently the role of DINAB), and technical inputs to the review process.

FIGURE 14. The recently revised EIA Process in Mozambique for A+ Projects, with the shaded entries are the responsibility of the proponent.

Source MITADER. Note: Estudo de Pre-avaliação e Definição de Âmbito (EPDA) is equivalent to a Scoping Report.



BOX 2. SALIENT FEATURES OF THE EIA PROCESS AS DEFINED IN *DECREE NO.54/2015. REGULATIONS ON THE PROCESS OF ENVIRONMENTAL IMPACT ASSESSMENT* RELEVANT TO UPSTREAM OIL AND GAS EXPLORATION AND DEVELOPMENT ACTIVITIES.

Definitions of A+ Projects

Annex II defines the **A+ category** projects as those that, due to their complexity, location and/or irreversibility and magnitude of possible impacts, deserve not only an elevated level of social and environmental vigilance, but also the involvement of specialists in EIA processes. As part of this category are those activities referred to and/or located in the areas as described below:

2. g) Extraction, storage, transport, processing and production of derivatives of hydrocarbons;

2. h) Subterranean and surface storage installations for flammable gases.

Annex II defines the **A category** projects as those with activities that significantly affect living creatures and environmentally sensitive areas and whose impacts are of great duration, intensity, magnitude and significance. Part of this category are those activities referred to and/or located in the areas as described below:

2.1. n) oil and gas pipelines, marine cables and fiber-optic cables longer than 5 km.

Differences between A+ and A category projects

Article 4. a)
A+ projects require supervision by independent Specialist Reviewers with proven experience.

Article 10. 4.
The report from the Specialist Reviewers of the EPDA [Scoping Report] is an integral part of the EIA process and must be submitted to the EIA Authority before approval of the EPDA [Scoping Report] for A+ activities.

Article 14. 1.
The duties of the Specialist Reviewers are to: a) Revise the EIA documents submitted; b) Prepare the review reports.

Article 14. 2.
To the Specialist Reviewers are owed a remuneration whose associated costs are the responsibility of the authority responsible for the Environment.

Article 16. 3.
The group of Specialist Reviewers prepares a review of the EPDA [Scoping Report] and prepares an annex that forms an integral part of the EIA process, in the case of A+ category, that is made public.

Article 17. 2.
The same group of Specialist Reviewers that reviewed the EPDA [Scoping Report] proceeds to review the EIA and prepares an equivalent, in the form of an annex, which forms an integral part of the EIA process, in the case of A+ category, that is made public.

Article 24. 3.
The group of specialists contracted by the authority responsible for the environment, should declare in writing, prior to being contracted, the existence of any conflict of interest directly or indirectly linked to the activity being reviewed...

Article 27:
Costs – initiation of the process = 1,000,000 MT (USD 16,400); Environmental Licence = 0.3% of the value of the investment.

■ **Key Challenge 10:**
Need to review and strengthen the EIA process

Four entities interviewed were explicit about perceived weaknesses in the review process. The need to strengthen the technical capacity of the CTA (and arrange some form of continuity so that oil and gas projects are reviewed by the same committees), was also identified by four entities interviewed. Within the DLA, there are currently no identified oil and gas experts responsible for coordinating the review of the oil and gas EIAs.

As described in at least six articles of the new EIA regulations (see **Box 2**), the involvement of "Specialist Reviewers" is required for A+ projects. These approved specialist reviewers (unspecified number) are required to comment on the reports that form an integral party of the EIA. There is some uncertainty over who these individuals might be, which potentially weakens the final scrutiny and approval process.

Based on the CNA consultations, contributions from the Validation Workshop, combined with recommendations from a specific review of the EIA process in Mozambique, including comparison with those of other neighbouring countries and the European Union (Rebelo and Guerreiro, 2017), six specific recommendations have emerged.

Recommendations: (a) Examine existing inter-ministerial coordination mechanisms, and the potential to streamline the process for EIA reviews, including staff, planning and establishment of a permanent coordination committee/core within MITADER for oil and gas activities. (b) Establish a roster of "specialist reviewers" to be screened by experienced and qualified third parties, and managed by DINAB; (c) Potentially consider involvement of the environmental department of the Attorney General's Office, notably in projects that are more legally demanding, given their complexity (as indicated by the COMBO Project (2018)); (d) Operationalize the CTA as a permanent mechanism and strengthen this committee with financial resources, as well as human and material resources; and (e) Develop an approved roster of national EIA consultants, approved by DINAB, for oil and gas projects.

As stressed above for the Key Challenge No. 9, it is important to note the turnover of qualified personnel; thus, establishment of any permanent coordination committee or core within MITADER for oil and gas projects needs to be accompanied by appropriate incentives.

■ **Key Challenge 11:**
Unclear and/or lack of internal and external communication platforms for EIA documents

In addition to improving internal coordination and information sharing, several interviewees stressed that there is too little sharing of oil and gas related environmental and EIA details and reports with the public at large, and between institutions (including Districts) of EIAs and EMPs, either as hard copies or electronically. This also includes dissemination of EIAs from national to provincial offices. In addition, private sector operators felt that a platform for engagement with the Government would help develop improved understanding of operations and the industry, outside of the EIA process.

Recommendation: Examine means to disseminate environmental data associated with activities and their respective EIA reports and accompanying management plans and approval conditions to the wider public and civil society. Options include creation of an electronic database and website or other open data platform for publishing EIA reports, management plans and related data for public access.

4.4.3 RELATIONSHIP BETWEEN PROPONENT AND REGULATORY AUTHORITY

■ **Key Challenge 12:**
Insufficient interaction between proponent and regulator

At the start of the EIA process, the regulations state (Decree 54/2015 Article 25. 7) that the proponent should personally, or through a legal representative, visit the authority responsible for the EIA. This appears to be the only situation when the proponent and the authorities might meet during the process that typically lasts for several months. During both the review of the EPDA (Scoping Report) and ToRs, and the final EIA report, there is no direct involvement of the proponent.

This differs from some countries, such as Tanzania for example, where there is involvement of the proponent in the final EIA assessment review. One benefit from this is that the regulators have an opportunity to interact directly with the proponent (and their EIA consultants), thus contributing to developing dialogue and trust and improving a relationship. The second benefit is that through witnessing first-hand the comments received during this more open round-table review process, the proponent becomes aware of any salient changes that might be required to finalize the EIA process which would expedite its completion. A third benefit can also be building capacity of the Government authorities, as proponents can better explain their assessment and mitigation measures – particularly where these are following international standards which may be unfamiliar to Government authorities. Exposure to multi-national operators could potentially be quite important in this regard.

Recommendation: Examine benefits and procedures of including the proponent (and EIA consultant) during the final technical review of the EIA, aiming to reduce review time of the EIAs, clarify some areas during the EIA process and improve interaction between the regulator, proponent and the consultants.

4.4.4 EIA COMPLIANCE AND MONITORING

To ensure that EIA conditions are being met (i.e. that the project is compliant), monitoring documentation provided by the proponent during project implementation and operations must be verified. This process is complemented by site inspection visits. These responsibilities rest squarely with AQUA, at MITADER, within which it is an autonomous entity but not yet fully capacitated, based on CNA interviews.

The process of auditing an activity or project, often after the activity has been completed or at specific intervals (usually years), is an additional monitoring and verification exercise that compares the overall performance of the project against the original project description as described in the EIA and any subsequent changes reported. This exercise usually takes several months to complete and is undertaken by independent specialists/ consultants on behalf of the proponent. In Mozambique, there is specific legislation to address such environmental auditing. This is different from compliance monitoring while a project is underway, that requires periodic site inspections.

■ **Key Challenge 13:**
Weaknesses in compliance and monitoring procedures and facilities

Seven of the 28 entities interviewed, including the private sector, identified weaknesses in the compliance and monitoring process undertaken by the regulator. It was made clear that there are doubts over the integrity of proponents, and whether these and their monitoring reports can be trusted. Per diems are reportedly paid to compliance inspectors directly, creating a lack of transparency and misaligned financial incentives related to inspections. It was reported that some companies do not adhere to the approved EMPs, and Government inspectors do not systematically cross-reference monitoring activities with the EMPs.

Suggested improvements range from involving the provincial level of Government, to make them more familiar with the process, given the requirement for their comments on the EIA, to involvement of other institutions (e.g. IIP) in defining monitoring parameters in the EMP.

The COMBO Project (2018) study concluded that there appears to be a lack of strategy/ planning and capacity for the adequate monitoring and enforcement of the licensed activities, including the EMPs. The challenge of lacking technical capacity has been addressed in **Section 4.3.2**. Other limitations identified were budgetary and lack of equipment to undertake the inspections.

It was also noted that due to the lack of capacity within Government institutions, the monitoring of certain aspects of projects including EMP implementation, is outsourced to consultants. This also happens in other countries (e.g. Tanzania) and is an example of the lack of clarity regarding mandates, i.e. whether such tasks are indeed the role of Government institutions or whether the latter should focus more on interpretation of the results supplied, and only make occasional, field inspection visits to conduct their own verifications.

Whichever the case, there is a need for a review of the procedures so that all elements within the project (proponent, consultants and national institutions) are aware of the division of tasks and able to work together to achieve adequate project monitoring, during construction and operation, in a clear and transparent way. One suggestion was when companies hire consultants to conduct monitoring, consultants should be accompanied by staff from the Government to gain training from the experience. To further emphasize the importance of completing auditing and compliance requirements, it was felt that developing matching legislation that defines the consequences and penalties applicable to proponents for failure to comply would be helpful.

Recommendations: (a) Review procedures and facilities required for oil and gas project monitoring every five years; (b) Resolve the scarcity of facilities (laboratory buildings and equipment) for environmental monitoring.

4.4.5 DECOMMISSIONING

According to the Petroleum Operations Regulation Decree 34/2015, a detailed decommissioning plan must be prepared in consultation with the INP no less than two years before the end of a petroleum project. The plan must include an evaluation of the environmental impact of the activities involved in closing and abandonment. The oil and gas operators must follow both good international practices for oil fields and the applicable environmental legislation. The plans are evaluated and approved case by case by MIREME.

There is also a requirement for concessionaires to create a fund for the closure and decommissioning of the infrastructure (specified in Article 40 of the Petroleum Law NO. 21/2014). As described in more detail by PLMJ (2017) in their analysis of the law, each concessionaire with a contract for production of, or a use of infrastructure for, petroleum operations shall open a bank account as a decommissioning fund and periodically deposit amounts, covering such costs as per the estimates submitted and annually updated by the concessionaires. It is not clear if this is currently taking place or what the periodic deposits represent.

Decommissioning is becoming increasing commonplace worldwide, as oil and gas infrastructure reaches its 30-40 lifespan, with numerous guidelines developed, as described in Oil & Gas UK (2017) and BEIS (2018) among other recent sources. In the absence of clear guidelines in place, increased emphasis is placed on the regulatory bodies to carefully review, and subsequently approve, any plans for example for well decommissioning to ensure they will achieve long-term well integrity.

In Mozambique, it is unclear whether there is a provision or need to address environmental or socio-economic risks associated with oil and gas infrastructure that is now earmarked for decommissioning. Whether proponents are required to consider built-in decommissioning approaches during project design, or if any or which institutions will be required to address decommissioning challenges should they arise are also not known.

■ **Key Challenge 14:**
Unclear procedures and understanding of decommissioning of oil and gas infrastructure

Recommendations: (a) Conduct a review of the status and forecast of decommissioning requirements within the oil and gas sector and capacity of institutions to meet the needs (to enforce and monitor those requirements given to the operator); (b) Capacitate institutions to respond to/address requirements of decommissioning of oil and gas infrastructure (including storage tanks) and fill the gaps in the legislation related to decommissioning, aligned with international trends in this important part of the project cycle.

4.5 ENVIRONMENTAL DATA RELEVANT TO THE OIL AND GAS SECTOR

4.5.1 DATA AVAILABILITY AND ACCESSIBILITY

■ **Key Challenge 15:**
Incomplete (and inaccessible) environmental data to support environmental management of oil and gas activities

The value of having a complete set of up-to-date data on the condition of the marine and terrestrial environment, including biodiversity and environmental parameters, hosted by a digital platform and accessible to all relevant entities cannot be overstated. The four main features of environmental datasets are its availability, its accessibility to end users, the capacity of users to work with, operate and benefit from the information, and the means and mechanisms to update it as new data becomes available. Eleven of the 28 entities interviewed commented on the status and need of such a resource.

In Mozambique, there are a number of existing databases, hosted by diverse public and private institutions. However, there is no environmental database that can be accessed by all MITADER staff, and there seems to be lack of data integration. Whether there are possibilities to draw on platforms that have been established from the COMBO Project (2018) needs to be verified, as does the status of the datasets hosted by the Centro Nacional de Cartografía e Teledetecção [National Cartography and Remote Sensing Centre] (CENACARTA).

For the offshore exploration blocks, the Divisão Gestão Ambiental (DGA) [or Department of Environmental Management] (within DINAB) confirmed there was a lack of baseline data and no dedicated biodiversity database. Private sector operators suggested that whereas Government agencies do have some data, it would need to be verified. Partial data is made available through reports, but not raw data, as this comes at a cost. AQUA is presently compiling data related to noise and dust pollution. The National Remote Sensing and Cartography Centre, linked to the Ministry of Agriculture and Rural Development, handles satellite data and is reportedly developing a geographic information system (GIS) database.

Customizable GIS platforms[5] have been developed to increase the use of spatial data in policy and decision making and could immediately be deployed into the Mozambican context at relatively low cost. However, a long-term strategy to maintain the platform, ensure capacity for its use, and update the source datasets needs to be considered. Equally, non-technical barriers to data sharing will need to be addressed.

AQUA indicated that they may be mandated to prepare a data sharing platform, although other entities (e.g. DLA, DINAB) were of the impression that the Administração Nacional das Áreas de Conservação (ANAC) [or National Administration of Conservation Areas] was the repository of spatial data. It is not clear on which institutional mandates the hosting of environmental data would be best placed, but efforts are needed to identify the most appropriate repository with matching funding. An impartial third-party platform could help entice agencies to share data across Government.

Currently, MITADER does have a GIS unit that handles geo-spatial data, and it is likely that one of the entities with this Ministry would be tasked with updating and maintaining such a facility. Several entities mentioned the CENACARTA division within MITADER as being potentially appropriate. There is a widely-recognized need to address data sharing between institutions, as articulated during the Validation Workshop, with marine datasets being held and maintained by IIP as the responsible entity, and other (terrestrial) datasets held by MITADER and/or others.

5 *An example of such open access, adaptable GIS platforms is UN Environment's MapX platform: https://www.mapx.org/*

Once agreed, the mechanisms for efficiently making the data available across different sectors and the country are needed (as suggested by the Direcção Provincial da Terra, Ambiente e Desenvolvimento Rural (DPTADER) [or Provincial Directorate for Land, Environment and Rural Development] at Matola), potentially through a web-based portal. Also noted at the Validation Workshop was that funds are often provided for development of data-based initiatives, but when funds are no longer available, initiatives are no longer sustained. Such a challenge is common to many countries like Mozambique where institutional funding is often restricted to core budget lines.

Recommendations: (a) Undertake a data inventory of existing environmental data, ideally of digital data, and determine gaps and barriers and restrictions to access; (b) Create a database that is accessible online and hosted by an appropriate institution; (c) Conduct targeted environmental surveys where necessary in collaboration with relevant entities to fill data gaps (including for offshore areas) and help establish environmental baselines; (d) Create a working group of inter-disciplinary experts, involving national universities, in the following research areas: ecology, zoology, botany, oceanography, geophysics, among others.

4.5.2 SENSITIVITY MAPPING

There was general consensus on the need to develop a coastal sensitivity atlas to guide oil and gas operations as well as provide a vital tool for oil spill response efforts. To establish such a tool, environmental data is a main requirement.

■ Key Challenge 16:
Absence of maps showing sensitivity of habitats to oil spills

One of the typical elements included in an SEA is spatial planning to address potential area-based conflicts across sectors. To assess the sensitivity of the environment to these multiple pressures, sensitivity atlases are commonly used (e.g. TanSEA[6] in Tanzania, Zansea[7] in Zanzibar and KenSea[8] for Kenya). INAMAR confirmed that coastal sensitivity mapping had been conducted, but that no GIS platform was established.

Recommendations: (a) Examine the legal basis and associated guidance for integrated spatial planning that addresses multiple environmental, social and economic interests for oil and gas development; (b) Develop an oil spill sensitivity atlas (and in doing so, establish a database) for each coastal province, to increase data resolution; and combine the seven provincial maps to form a complete national coastal sensitivity atlas.

6 *TanSEA: Tanzania coastal sensitivity atlas, available at http://www.tansea.org/zansea-conference/*

7 *ZANSEA: Zanzibar Social Environmental Atlas, available at https://www.suza.ac.tz/zansea-website/index.php*

8 *KenSea: Environmental Sensitivity Atlas for Coastal Area of Kenya, available at ttps://www.oceandocs.org/handle/1834/7655*

4.6 EMERGENCY PREPAREDNESS AND RESPONSE

With the development of the oil and gas sector in the country, there is increased risk of accidents that require an emergency response apparatus. Offshore exploration and development drilling, for example, requires regular supplies of fuel for the drill-ship and return trips with waste consignments, including of hazardous products. The supply vessels that transport these materials, often on daily trips, would normally have an oil spill contingency plan and Tier 1 equipment to handle limited spills. In the case of developing offshore gas fields, the route of the supply vessels from the port of Pemba to the gas fields is likely to be traversed at times by international shipping, including of oil-laden tankers.

Currently in Mozambique there are limited capabilities to cope with a major oil spill, although there is a National Oil Spill Contingency Plan (NOSCP) under development. In late 2016, a two-week in-country review and assessment of the national oil spill response program was conducted by POLARIS[9] and supporting Government ministries and departments, with INAMAR as the lead agency for oil spill response. The focus has traditionally been on shipping, and hence is centred at the key ports: Maputo/Matola, Beira, Nacala, and Pemba. The MAGTAP (MIREME, 2017) included support through workshops and exercises in 2017, and OfD is assisting with the review of the NOSCP. The recently-approved national disaster risk reduction plan (2017-2030) (GoM, 2017), does not include oil spills. The coastal sensitivity atlas, discussed above would also need to be included in an NOSCP.

■ Key Challenge 17:
Unclear alignment on requirements and preparedness for oil spill response

Meetings with INAMAR and INGC confirmed that there is a need for better understanding of oil and gas exploration and production risks to assess the level of environmental risks and issues. The involvement of district level staff in an integrated coastal oil spill response remains unclear.

It is also recognized that the Government cannot acquire and maintain all the equipment that is needed along the entire length of the coastline. To address the latter, a mechanism for equipment sharing between all disaster response entities (including oil and gas operators) is needed, as recommended by the INAMAR, based on their discussions during the POLARIS training.

Recommendations: (a) Review risks of oil spills and other types of pollution related to oil and gas sector, focused on the geographical areas of activity; revise and update the NOSCP accordingly, to include, among others, environmental sensitivity mapping (see above) and a risk assessment and prevention strategy; (b) Align requirements, preparation and responses for oil spills on land under the above-updated NOSCP, with clearly established roles and tasks for all institutions, at different levels, and between Government institutions and operators; (c) Formulate coordination mechanisms between Government and oil and gas operators specifically to address spills related to the oil and gas.

■ Key Challenge 18:
Unclear status of emergency preparedness and response capacity

During the CNA mission, it was reported that the NOSCP was being reviewed and updated. As recommended above, ideally, the NOSCP should cover both land and marine spill scenarios. Pending completion of that process, there may still be additional needs with respect to technical capacity building. There is also recognition that there is room for improvement in capacity among the relevant institutions (INAMAR, INP, INGC). Even though training has been conducted, it is important that a long-term vision be developed to accommodate changes to staff, changes in geographic needs and updates on techniques and strategies for handling different types of spills and other risks. The target audience for trainings would typically include district and provincial staff and staff within the relevant institutions (INGC, INP/ENH, INAMAR).

Recommendation: Review technical capacity and coordination of responses within relevant institutions involved in off- and on-shore spill scenarios under the above-updated NOSCP.

9 *http://www.polarisappliedsciences.com/en/national-oil-spill-preparedness-study-mozambique-nov-20-dec-2-2016/*

4.7 CHEMICALS AND WASTE MANAGEMENT

Inquiries on waste associated with the oil and gas sector were included in all interviews in February 2018, but in most cases, no concern was raised except to note that there was little expertise locally and a general lack of waste management facilities for the oil and gas sector. The issue of chemicals and waste management emerged again, but with greater concern during the oil and gas Foundation Course, delivered by UN Environment in April 2018 in Maputo, involving various Ministries (several of whom were regulators) and local government representatives. In particular, the lack of hazardous waste management facilities and/or their inadequacy to handle hazardous wastes from the oil and gas sector was highlighted. This surfaced especially during the site visit to the Mavoco industrial landfill outside Maputo, currently the only hazardous waste management facility in the country.

The insufficient waste management infrastructure in Mozambique was also highlighted by Ferrari et al (2016). During face-to-face interviews, four entities suggested that there were potential roles for other elements of the private sector to support the development of the oil and gas sector in Mozambique. Supporting activities commonly led by the private sector in neighbouring countries like South Africa and Tanzania include waste management facilities and accredited analytical laboratories, though regular demand from oil and gas operators is generally one precursor for accredited waste companies willing to make such investments.

Key Challenge 19:
Shortage of accredited hazardous waste management facilities

As described by Scarlet and Bandeira (2014), the Mavoco site began operations in 2005. Currently the site receives and treats hazardous industrial waste from industries and petrol companies. It is located about 20 km from Maputo city, on the western shores of the Matola River, inland from the Mozal aluminium smelter. However, as the cost of treatment of hazardous waste is deemed high (USD 190/tonne), most industries reportedly do not use this facility and inappropriately dispose their waste at the Hulene landfill site, close to dense suburbs, where fees are demanded by truck load rather than by waste type (Scarlet and Bandeira, 2014).

As highlighted by Brebbia and Miralles i Garcia (2016), the most recent legal tool for waste management (Regulation for the Management of Hazardous Waste Decree 83/2014) only came into force in March 2016. By that time, 208 wells had already been drilled (**Section 1**). The need for two more waste management facilities in the country was identified by DINAB's DGA as rather urgent, and operators concurred that there was a lack of infrastructure for hazardous waste handling at audited and approved facilities. Currently oil and gas operators transport their waste across borders, e.g. to South Africa, using third part contractors. For the LNG facilities being considered at present off Cado Delgado, the volumes of hazardous waste generated, as quoted by Brebbia and Miralles i Garcia (2016), are 17,300 tonnes during construction and 350 tonnes per year during operations.

Recommendation: Review the legal and practical requirements of the oil and gas sector with respect to in-country hazardous waste management facilities and, if appropriate, consider means to involve the private sector.

Key Challenge 20:
Shortage of accredited analytical laboratories

In Mozambique, private sector respondents confirmed there are not enough accredited laboratories for chemical analysis of monitoring samples, with companies shipping samples overseas (South Africa and Europe). AQUA stressed the need for a domestic laboratory for independent analysis. A cost benefit analysis would be a pre-requisite to investing in such a facility. However, it also was made clear at the Validation Workshop that for the last two years AQUA has been focused on establishing such a facility. In Tanzania, two accredited, independent laboratories provide extensive analytical services to the mining and oil and gas sectors, while Government laboratories are responsible for management of chemicals (permitting, importation, transportation etc) and for analysis of drinking water and freshwater bodies. In Uganda, the UN Environment/OfD capacity needs assessment report concluded that although the Government felt the need that it should have and operate its own facility, the high capital costs for both start-up, operation and maintenance would prove to be unsustainable. In addition, the number of samples collected per month would most likely be far below the critical mass of samples needed to maintain a professional facility. The recommendations of that study were to maximize limited resources by establishing a common reception and processing centre in one designated institute for analysing samples taken from field monitoring visits, and establishing links with reliable, accredited international laboratories for detailed analyses of samples. The study also suggested establishing a system of information management that enables other institutions and district staff to access and obtain results of field samples being collected and reported.

Recommendation: Define the roles and capacity of Government institutions (including AQUA) with respect to providing an accredited laboratory facility and, if appropriate, consider means to involve the private sector.

Key Challenge 21:
Unclear institutional mandates on in-country chemical management relevant to the needs of the oil and gas sector

The legislation appears to include very little on the management of chemicals associated with the oil and gas sector. In light of the expansion in oil and gas sector over the coming decade, and the accompanying importation and use of large quantities, types (and evolving formulations) of chemicals, there is a need for an entity within Government capable of managing this challenge. As highlighted in **Section 4.3.2**, most respondents confirmed there was weak understanding of the oil and gas sector, including on the type and use of chemicals. With respect to dispersants for combating oil spills, ITOPF (2006) explains that formal dispersant application guidelines were not developed (at that time) and, given the complex coastline, fringed in many places by mangrove forest, coral reefs and shallow water, the applicability of dispersants may be significantly restricted. Participants at the Validation Workshop in May 2018 suggested that there was outdated legislation on dispersants in Mozambique, but no examples were found to confirm that.

Recommendations: (a) Review the chemical needs of the oil and gas sector and the capacity in-country to manage the use of chemicals, including for operational use and for use during accidents; (b) Consider the appropriate use of chemical dispersants for oil spill incidents.

5 SUMMARY AND NEXT STEPS

Over the course of the analysis, the CNA study has identified seven thematic areas, under which are 21 key challenges and proposed 38 recommendations. An earlier set of challenges and recommendations were presented and validated at a National Validation Workshop in early May 2018, during which the identified challenges were further reviewed and recommendations prioritized into short-term versus long-term priorities. Almost without exception, all the key challenges were approved by the participants who awarded them the highest scores for validity (relevance), while the accompanying recommendations were also awarded the highest level of priority for implementation (see **Annex 3**).

Following subsequent review, the challenges, recommendation (and proposed actions) were refined and moulded into the versions presented in the preceding chapter of this report. These now form the contribution to the roadmap for strengthening of the capacity of the Mozambique Government institutions to manage environ mental and social aspects related to the oil and gas sector.

The next steps typically would include the following:

1. Dissemination of the CNA report to all relevant institutions as well as sub-national Government officials;
2. Re-visiting the recommendations within institutions and where necessary with relevant development partners; and
3. Develop a capacity development strategy and plan for strengthening environmental management in the oil and gas sector, identifying appropriate methodologies and tools for their implementation and implementing entities.

Given the expected increase in oil and gas activities over the coming decade, and in order to continue to operate an effective and sustainable EIA regime that can provide the environmental management framework to address the challenges posed by the oil and gas sector, heightened political will is necessary. With that in place, it can be expected that ultimately the EIA process and related SEA/SESA processes will help the country meet its sustainable development priorities.

Pristine coastal habitats at Santa Carolina Island in the Bazaruto Archipelago, close to Vilanculos and Inhassoro, the focus areas for the onshore exploration and development in the Mozambique Basin, and centre of Sasol's natural gas production, March 2018.

REFERENCES AND DOCUMENTS REVIEWED

BEIS (2018) *Decommissioning of Offshore Oil and Gas Installations and Pipelines. Guidance Notes*. Produced by Offshore Decommissioning Unit/Offshore Petroleum Regulator for Environment and Decommissioning/Department of Business, Energy and Industrial Strategy, 122 pp.

Brebbia, C.A. & Miralles i Garcia J.L. (eds) (2016) Environmental and Economic Impact on Sustainable Development. WIT Press. 262 pp.

COMBO Project (2018) *Gap Analysis on Policy, Law, Capacity and Experience of the Government of Mozambique´s institutions to Deliver No Net Loss (or Net Gain) of Biodiversity*. Project COMBO: Conservation, Impact Mitigation and Biodiversity Offsets in Africa. WCS/Biotope/Forest Trends, supported by AFD, FFEM and MAVA.

Ferrari, K., Gamberini, R., Rimini, B. and Abacassamo, H. (2016) Key strategic actions to improve the challenge of hazardous waste management in Mozambique. International Journal of Sustainable Development and Planning 11(6): 1044-1054.

Government of Mozambique (2017) *Plano Director para a Reducao de Risco de Desastres 2017-2030*. Conselho de Ministros. 37 pp.

IPIECA (2015) *Exploring methane emissions*. IPIECA Fact Sheet.

ITOPF (2006) Country and territory profiles: Mozambique.

LANDac (2016) *Food Security and Land Governance Factsheet, Mozambique*. Land Governance for Equitable and Sustainable Development. Utrecht University/Faculty of Geosciences Human Geography & Planning (SGPL)/ International Development Studies, Netherlands.

LNG (n.d) http://www.mzlng.com/

MIREME (2017) *Avaliação Ambiental e Social Estratégica do Sector Mineiro e do Gás em Moçambique. Relatorio Final – Sector de Gás*. MAGTAP/Cardno/OzMozis 225 pp.

Oil & Gas UK (2017) Decommissioning insight 2017. The UK Oil and Gas Industry Association Limited (trading as Oil & Gas UK), 46 pp.

PLMJ (2017) Mozambique – The Latest Petroleum Operations Regulation: What Effectively Changed? I. Petroleum: Brief On The 2015 Oil And Gas Upstream Operations Law. PLMJ/TTA NewsLextter January 2017.

Rebelo, C. and Guerreiro, J. (2017) *Comparative Evaluation of the EIA Systems in Kenya, Tanzania, Mozambique, South Africa, Angola, and the European Union*. Journal of Environmental Protection, 8, 603-636. https://doi.org/10.4236/jep.2017.85040

Scarlet, M. P & Bandeira, S. (2014) Pollution in Maputo Bay. In: Banderia, S. & Paula, J. (eds.) *The Maputo Bay Ecosystem*. WIOMSA, Zanzibar Town, pp. 347-372.

ANNEXES

ANNEX 1.
CNA ITINERARY OF THE UN ENVIRONMENT TEAM

19 February	UN Environment team (Marisol Estrella, Sharon Brooks, Inga Petersen and Matthew Richmond) arrived Maputo for the first phase of the CNA processes.
20 February	Half-day CNA Awareness Raising session on Environmental Management in the Oil and Gas Sector, was held at the Hotel Cardoso, Maputo, and attended by 24 Government representatives from 20 institutions and two representatives from the Government of Norway/Oil for Development Programme.
20 February	Commenced structured interviews with Government institutions.
26-27 February	Visit to Sasol Central Processing Facility at Inhassoro.
	Interviews with non-government institutions, private sector oil and gas investors, civil society, EIA practitioners and others (list attached, **Annex 2**).
1 March	De-brief with MITADER.
10 March	UN Environment Mission Report on the CNA submitted.
30 March	UN Environment team arrived Maputo to deliver the UN Environment-OfD Oil and Gas Foundation Course training module and continue the CNA stakeholder interview processes.
11 April	UN Environment team visit to Mavoco industrial waste management site.
23 April	UN Environment CNA Draft Preliminary Report submitted for review and translation.
1 May	UN Environment team (Matthew Richmond) arrived Maputo for the Validation Workshop and continued structured interviews with Government institutions.
3 May	Half day CNA Validation Workshop at Gloria Hotel, Maputo and attended by 18 Government representatives from 8 institutions and two representatives from the Government of Norway/Oil for Development Programme.
4 May	Half day OFD Programme Development Meeting at Gloria Hotel, Maputo and attended by 8 Government representatives from 4 institutions and one representatives from the Oil for Development Programme.
10 May	Electronic copy of the Preliminary Report and preliminary outputs of the Validation Workshop shared 10 May, for review and final inputs.
3 July	Environment CNA Draft Final Report submitted, for review and translation.
8 November	Final approval of the CNA Report by MITADER.

ANNEX 2.
LIST OF PARTICIPANTS AND INSTITUTIONS MET

Means of Engagement Legend:
IM = Introductory meeting; SI = Structured interview; VW = Validation Workshop;
PM = OfD Programme meeting; QU = Questionnaire; FC = Foundation Course; CO = Correspondence.

No.	Institution	Participants	Means of Engagement						
			IM	SI	VW	PM	QU	FC	CO
1	**DINAB/DLA (MITADER)**	Gaulheruma Amurane							
2		Rosana Francisco							
3		Eliseu Chadela							
4		Bento Joaquim Natal							
5		Felicio Fernando							
6		Alexandre Bartholomeu							
7		Agostinho Fernando							
8		Bernadino Victor							
9		Margarida Mabjaia							
10		Nehemias Mungoi							
11		Rosalina Niquice							
12		Joseffa Jussar							
13		Paulo Albano							
14		Nilsa Racune							
15		Rosalina Langa							
16		Atalia Nuvelo							
17	**DINAB/DGA (MITADER)**	Pedro Fernando Magaia							
18		Julia Ussy Felix							
19	**DINAB/DEA (MITADER)**	Alice Uchavo							
20		Aldacita Felicidade							
21		Aurora Muzima							
22		Rosalia Pedro							
23	**DINOTER (MITADER)**	Hercilio Djate							
24		Higiene Mussengue							
25	**DINAT (MITADER)**	Lázaro Matlava							
26		Sheila Chilaule							

No.	Institution	Participants	Means of Engagement						
			IM	SI	VW	PM	QU	FC	CO
27	**FNDS (MITADER)**	Suleimane Meguegy							
28		Adelino Amado							
29		Tania Paco							
30	**AQUA (MITADER)**	Laura Nhantumbo							
31		Auroa Souza							
32		Mariana Ernesto Tinga							
33	**ANAC (MITADER)**	Francisco Augusto Pariela							
34		Leovigildo Jose							
35		Armindo Joao Araman							
36		Pejul Sebastiao							
37		Felix Guimaraes							
38	**ITADER (MITADER)**	Albertina Banze							
39		Carlos da Piedade Zanguze							
40	**DPTADER Cabo Delgado (MITADER)**	Arlindo Dgedge							
41		Augusto Assane							
42	**DPTADER Maputo (MITADER)**	Lima Matsinhe							
43		Augusto Couana							
44	**DPTADER Inhambane (MITADER)**	Levin Antonio Cuinica							
45	**INP (MIREME)**	Abelina Chambule							
46		Guilhermina Honwana							
47	**IGREME (MIREME)**	Rui Lucas Silva							
48		Luisa Mahocha							
49	**ENH (MIREME)**	Maria Alberto							
50		Fernanda Cossa							
51	**MAGTAP (MIREME)**	Cesar Mussagy							
52	**IIP (MIMAIP)**	Jorge Mario Mafuca							
53		Emidio Andre							
54	**INAMAR (MIMAIP)**	Albano Gove							
55		Eunice Rafael							
56		Maria Arminda Mlauze							

No.	Institution	Participants	Means of Engagement						
			IM	SI	VW	PM	QU	FC	CO
57	**Direcção Nacional de Ação Social (DNAS) (MGCAS)**	José Bambo							
58		Graciano M. Langa							
59	**SDPI Inhassoro**	Manuel Luis Guente							
60	**SDPI Vilanculos**	Fastudo Ernesto Balada							
61	**CENOE (INGC)**	Dennis Guiamba							
62		Mauricio Xerinda							
63		Agnaldo Emanuel Bila							
64	**WCS**	Hugo Costa							
65	**CIP**	Fatima Mimbire							
66	**Sasol HQ**	Ailton Rego							
67	**Sasol CPF**	Gido Mulhovo							
68		Inocêncio Assura							
69		Mauricio Vilanculu							
70		January							
71		Sura							
72		Raymundo							
73	**SCDS**	Gaye Thompson							
74	**Anadarko**	Estevao Mabjaia							
75	**Eni**	Adelio Panzeri							
76		Zoi Farenzena							
77		Edith							
78	**CONSULTEC**	Tiago Dray							
79		Emanuel Vicoso							
80	**COWI MOZAMBIQUE**	Yara Barreto							
81		Jose Chembeze							
82	**IMPACTO**	Uke Overvest							
83	**Universidade Eduardo Mondlane**	Aniceto Chauque							
84		Joao Mugabe							

ANNEX 3. VALIDATION OF KEY CHALLENGES AND RECOMMENDATIONS MATRIX FROM THE NATIONAL STAKEHOLDER CONSULTATION WORKSHOP (MAY 2018)

Notes: Scores (1 to 5, 5 highest): V – validity, U – urgency
'new' recommendations are based on feedback and subsequent analysis post validation process.

Key Challenge	V	Recommendations	U
Section 4.1 Policies and Legal Frameworks related to Oil and Gas			
1. Incomplete and/ or inconsistent legislation relating to oil and gas aspects	5	Conduct a comprehensive review and where necessary update relevant legislation to include oil and gas aspects, and address inconsistencies and omissions, in particular on the need for a sector SEA, to address air emissions from oil and gas installations and during exploration, regulations for soil management/pollution, noise pollution, rules on use of dispersants for oil spills and decommissioning, in light of likely future development in the sector.	5
		Develop awareness of oil and gas among legislators and technical knowledge among the MDAs who provide the information to legislators when they develop and discuss legislation.	new
2. Inconsistent implementation of legislation (including mandates)	3	Examine and address reasons for discrepancies and failures to implement legislation relevant to oil and gas activities.	3
		Address limits/borders of responsibilities (mandates) between the various entities and possible overlaps, and strengthen overall capture of pertinent oil and gas aspects.	new
3. Unclear legislation to conduct a SEA, including relating to oil and gas	5	Examine the final legal outcome resulting from the MIREME (2017) SESA to fully understand the implications of institutionalizing and giving legal mandate to its key findings and recommendations, and whether there are specific areas where further inputs are needed, including developing legislation for undertaking SESA in the country.	5
4. Undocumented gas flaring and fugitive emissions	3	Examine the new Petroleum Regulations and determine the most appropriate means to document volumes and types of gases flared and fugitive emissions.	3
Section 4.2 Institutional Architecture for Environmental Management in the Oil and Gas sector			
5. Overlapping and unclear institutional mandates leading to inefficiencies and operational delays	5	Examine and contrast mandates of relevant institutions to resolve inconsistencies and strengthen overall capture of pertinent oil and gas aspects, including those related to environmental monitoring.	new

Key Challenge	V	Recommendations	U
6. Unclear (and weak) coordination mechanisms for technical exchange on environmental issues	3	Review and determine the most appropriate mechanism for higher-level strategic planning and coordination of oil and gas issues, mindful that Government institutions are represented at both national and sub-national/provincial level where most relevant (i.e. those provinces with oil/gas fields).	5
		Establish a technical advisory organ/council for oil and gas where stakeholders (government institutions and other interested parties) can obtain and share information at technical level, with coordinated actions. It could be a two-tiered system comprised of a higher strategic body (senior, policymakers mainly) and the technical advisory group (senior technical officers of each key MDA). This structure would serve for discussion and approval in the first instance, of relevant documents relevant to the oil and gas sector. One means would be to strengthen the existing Conselho Nacional para o Desenvolvimento Sustentável (CONDES) [National Council for Sustainable Development]. Such a multi-institutional coordination mechanisms, would have clearly defined terms of reference (ToRs) and mandate given from their higher-level body, and proposed workplans and monitoring framework.	5
		Using the platform created (above), develop mechanisms to share information between institutions through focal points and from the platform to the wider public.	5
Section 4.3 Regulatory Institutions Staffing, Resources and Technical Capacity			
7. Gaps in technical capacity related to oil and gas within relevant institutions	5	Examine needs and means to improve technical capacity within relevant institutions, especially DINAB as the leading environmental regulatory agency. Examples include provision of specialized courses on issues important for managing the oil and gas sector for relevant institutions, as well as strategic level planning, how to use data and define indicators for monitoring, etc.	5
8. Inadequate funding for EIA reviews and compliance monitoring at all levels	5	Review funding requirements, and sources, for EIA and compliance monitoring, including inspection visits as well as pre-project planning activities, and mobilise environmental licensing fees to support environmental monitoring and evaluations, especially by DINAB.	5
9. Weak motivation among personnel	5	Review staffing and qualifications needed to match mandated management tasks, redistribute technical staff according to mandated tasks, with commensurate salary scales, and ensure payment of the fee for attendance of CTA for EIA review.	5

Key Challenge	V	Recommendations	U
Section 4.4 The EIA Process for Oil and Gas Projects			
10. Need to review and strengthen the EIA process and sharing of documents internally	5	Examine existing inter-ministerial coordination mechanisms, and the potential to streamline the process for EIA reviews, including staff, planning and establishment of a permanent coordination committee/core within MITADER for oil and gas activities (mindful of the turnover of qualified personnel described above, hence accompanied by appropriate incentives).	5
		Establish a roster of "specialist reviewers" to be screened by experienced and qualified third parties, and managed by DINAB.	5
		Potentially consider involvement of the environmental department of the Attorney General's Office, notably in projects that are more legally demanding, given their complexity (as indicated by the COMBO Project (2018).	5
		Operationalize the CTA as a permanent mechanism; strengthen this committee with financial resources, as well as human and material resources.	5
		Develop an approved roster of national EIA consultants approved by DINAB for oil and gas projects.	new
		Develop an electronic database (permanent and operational) for EIA documents, shared at all levels and easily accessible.	5
11. Unclear and/or lack of external communication platforms for EIA documents	5	Examine means to disseminate environmental data and EIA reports and accompanying management plans and approval conditions to the wider public and civil society, including creation of a website for publishing EIA reports, management plans and related data for public access.	5
12. Insufficient interaction between proponent and regulator	5	Examine benefits and procedures of including the proponent (and EIA consultant) during the final technical review of the EIA, aiming to reduce review time of the EIAs, clarify some areas during the EIA process and improve interaction between the regulator, proponent and the consultants.	5
13. Weaknesses in compliance and monitoring procedures and facilities	5	Review procedures and facilities required for oil and gas project monitoring every five years.	5
		Resolve the scarcity of facilities (laboratory buildings and equipment) for environmental monitoring.	new
14. Unclear procedures and understanding of decommissioning of oil and gas infrastructure	5	Conduct a review of the status and forecast of decommissioning requirements within the oil and gas sector and capacity of institutions to meet the needs (to enforce and monitor those requirements given to the operator).	5
		Capacitate institutions to respond/address requirements of decommissioning of oil and gas infrastructure (including storage tanks) and fill the gaps in the legislation related to decommissioning, aligned with international trends in this important part of the project cycle.	new

Key Challenge	V	Recommendations	U
Section 4.5 Environmental Data relevant to the Oil and Gas sector			
15. Incomplete environmental dataset to support environmental management of oil and gas activities	5	Undertake a data inventory of existing environmental data, ideally of digital data, and determine gaps and barriers and restrictions to access.	5
		Create a database that is accessible online and hosted by an appropriate institution.	5
		Conduct targeted environmental surveys where necessary in collaboration with relevant entities to fill data gaps (including for offshore areas) and help establish environmental baselines.	4
		Create a working group of inter-disciplinary experts, involving national universities, in the following research areas: ecology, zoology, botany, oceanography, geophysics, among others.	new
16. Absence of maps showing sensitivity of habitats to oil spills	5	Examine the legal basis and associated guidance for integrated spatial planning that addresses multiple environmental, social and economic interests for oil and gas development.	new
		Develop a sensitivity atlas (and in doing so, establish a database) for each coastal province, to increase data resolution; and combine the seven provincial maps to form a complete national coastal sensitivity atlas.	5
Section 4.6 Emergency preparedness and response			
17. Unclear alignment on requirements and preparedness for oil spill response	5	Review risks of oil spills and other types of pollution related to oil and gas sector, focused on the geographical areas of activity; revise and update the NOSCP accordingly, to include, among others, environmental sensitivity mapping (see above) and a risk assessment and prevention strategy.	3
		Align requirements, preparation and responses for oil spills on land under the above-updated NOSCP, with clearly established roles and tasks for all institutions, at different levels, and between Government institutions and operators, plus consider the appropriate lead implementing agency for land-based contingency planning.	new
		Formulate strategies and coordination mechanisms specifically to address spills related to the oil and gas sector, on land and at sea, based on prior agreed commitment from the oil and gas operators.	3
18. Unclear status of emergency preparedness and response capacity	5	Review technical capacity and coordination of responses within relevant institutions involved in off- and on-shore spill scenarios under the above-updated NOSCP.	5

Key Challenge	V	Recommendations	U
Section 4.7 Chemicals and Waste Management			
19. Shortage of accredited analytical laboratories	5	Define the roles and capacity of government institutions (including AQUA) with respect to providing an accredited laboratory facility and, if appropriate, consider means to involve the private sector.	5
20. Shortage of accredited hazardous waste management facilities	5	Review the legal and practical requirements of the oil and gas sector with respect to in-country hazardous waste management facilities and, if appropriate, consider means to involve the private sector to address shortage of facilities capable of handling waste streams from the oil and gas sector.	3
21. Unclear institutional mandates on in-country chemical management relevant to the needs of the oil and gas sector	4	Review the chemical needs of the oil and gas sector and the capacity in-country to manage the use of chemicals, including for operational use and for use during oil spill incidents.	3
		Consider the appropriate use of chemical dispersants for oil spill incidents.	new

ANNEX 4.
DESCRIPTION OF THE PRINCIPAL LEGISLATION RELEVANT TO OIL AND GAS SECTOR

"Constitution of the Republic of Mozambique" (amended 2004) which defines the right of all citizens to live in a balanced natural environment and their obligation to protect it. It also commits the State to promote initiatives that ensure ecological balance and preservation of the environment; and implement policies to prevent and control pollution and integrate environmental objectives in all public-sector policies to guarantee citizens the right to live in a balanced environment under a sustainable development framework.

"Environmental Law", Decree 20/1997 of 1 October, which aims to provide a legal framework for the use and correct management of the environment and its components. As such, it defines the legal basis for the sound use and management of the environment as a means to safeguard sustainable development in the country. It applies to all activities in both public and private sectors that may directly or indirectly affect the environment. It further commits the Government of Mozambique to create adequate mechanisms for public participation in environmental management, from the drafting of environmental policies and legislation to implementation; and prohibits pollution, activities likely to accelerate erosion, desertification, or any other form of environmental degradation beyond the legally established limits.

"Regulation on the Environmental Impact Assessment (EIA) procedure", Decree 54/2015 of 31 December, that supersedes and revokes previous EIA legislation, and introduces for the first time the A+ category of project, that includes most oil and gas exploration and development activities; pipelines are covered under A projects (see **Section 4.4**, **Box 2** for further elaboration).

"Conservation Law" Decree 16 /2014 of 16 June, and the amended Decree 5/2017 of 11 May. Its main objective is to establish basic principles and rules concerning the protection, conservation, restoration and sustainable use of biological diversity in conservation areas, as well as an integrated management framework for the sustainable development of the country. The amended decree re-publishes the Law of Protection, Conservation and Sustainable Use of Biological Diversity, and introduces amendments to its objectives, including the setting up of a national system of conservation areas, to the mechanisms for financing conservation areas and compensating conservation efforts, to protection and supervision, to the sanctuary framework and to the associated investigation process.

"Petroleum Law" Decree 21/2014 of 18 August, revoking the previous Law 3/2001, of 21 February, and all other contravening legislation. In addition to introducing new roles of the state, and requiring registration on Mozambique's Stock Exchange, the law includes local content provisions and requires that portions of revenues generated will be channelled via the State Budget for the development of local communities in the areas of activity. The law further requires respect for national interests, including navigation, research and conservation of marine ecosystems and other natural resources, existing economic activities, food and nutrition safety of the communities and the environment in general. It also emphasises the role and need to adhere to the EIA conditions, and in the cases of environmental damages or pollution, makes it clear that the petroleum operations right holder shall compensate the affected parties for the damages caused, regardless of fault (i.e. polluter pays principle). On a wider scope, it confirms that the Government ensures the rigorous observation of the protection and rehabilitation environmental norms, as defined in laws and conventions and good international practices.

"Petroleum Operations Regulation" (or the "New POR") Decree 34/2015, of 31 December. This regulation replaces the previous Oil and Gas Upstream Operations Law, Decree 21/2014, of 18 August and revokes the previous Petroleum Operations Regulation, Decree 24/2004, of 20 August. In addition to addressing legal, contractual and infrastructure-related aspects in the industry, the law describes procedures for decommissioning and related activities, the importance of preserving and preventing harm to human life, assets and the environment, the need to comply with best industry practices and international oil industry standards, and for the first time, describes gas flaring as needing to be authorized by the INP.

"Pollution Prevention and Protection of the Marine and Coastal Environment Regulation" Decree 45/2006, of 30 November. This regulation revokes the previous decree (495/73) and prohibits discharge of any wastewater that is toxic or harmful as well as any other potentially polluting substances, to waters, fields or river banks. It also specifically protects certain marine habitats, such as coral reefs.

"Regulation for the Management of Urban Solid Waste Management" Decree 94/2014, 31 December. This Regulation aims at establishing general rules related to residue disposal, including: municipal solid waste management rules in the country applying to all natural and legal, public and private persons involved in the production and management of solid urban waste and the production and management of industrial and medical waste treated in the urban area. It does not include hazardous waste that is governed by the Regulation on the Management of Hazardous Waste Decree 83/2014.

"Regulations on the Resettlement Process resulting from Economic Activities" Decree 31/2012, 8 August. This new regulation establishes the basic rules and principles on the resettlement process for providing the opportunity to improve the quality of life of affected households. It also requires that a Resettlement Action Plan (RAP) is completed and submit together with an EIA Report the environmental regulator.

ANNEX 5. INSTITUTIONAL PROFILES

MITADER – Ministério da Terra, Ambiente e Desenvolvimento Rural [Ministry of Land, Environment and Rural Development]

DINAB – Direcção Nacional do Ambiente [National Directorate of Environment]

DINAB is the authority responsible for carrying out environmental assessment. It implements EIA procedure and enforces ESIA regulations and other environmental policies. It deals with environmental issues and is in charge of environmental control; applies approaches to development projects that might affect the environment and biodiversity.

Source: http://combo-africa.org/wp-content/uploads/2018/03/20180222_c1_gap_analysis_policy_law_capacity_experience_nnl_en.pdf

DLA – Divisão de Licenciamento Ambiental [Department of Environmental Licensing]
DLA is in charge of environment licensing: approval and attribution of environmental licence; ensure the compliance with all environmental requirements, handling projects on diversity and its impacts, EIA, mitigation hierarchy and biodiversity.

Source: http://combo-africa.org/wp-content/uploads/2018/03/20180222_c1_gap_analysis_policy_law_capacity_experience_nnl_en.pdf

DEA – Divisão de Educação Ambiental [Department of Environmental Education]
DEA has the responsibility to promote and raise awareness at both local and national levels of the environment management, planning, sanitation, prevention of land degradation, pollution, waste management and reduction of natural disasters.

Source: https://www.unpei.org/sites/default/files/dmdocuments/Mozambique%20PEER%20Full%20English.pdf

DGA – Divisão de Gestão Ambiental [Department of Environmental Management]
This department under DINAB handles biodiversity, develop regulations on biodiversity offsets.

Source: http://combo-africa.org/wp-content/uploads/2018/03/20180222_c1_gap_analysis_policy_law_capacity_experience_nnl_en.pdf

DINOTER – Direcção Nacional de Ordinamento Territorial e Reassentamento [National Directorate of Resettlement and Territorial Planning]

DINOTER has the environmental inspection responsibilities in the case of large-scale land applications, and a coordinating/technical support role in the context of land use planning activities carried out by decentralized authorities.

Source: http://www.landgovernance.org/assets/20160608-Factsheet-Mozambique.pdf

DINAT – Direcção Nacional de Terras [National Directorate of Land]

DINAT is the regulatory authority, charged with holding and organizing the national land cadastral records and, in the case of large-scale land applications over 1000 ha, responsible for processing applications for approval. The DINAT also provides technical guidance to the cadastral services of the provincial administrations and the decentralized municipalities.

Source: http://www.landgovernance.org/assets/20160608-Factsheet-Mozambique.pdf

AQUA – Agência Nacional para o Controlo de Qualidade Ambiental [National Agency of Environmental Quality Control]

The responsibilities of AQUA include to adopt and implement measures to improve the capacity to monitor environmental quality standards and to develop specific research to assess environmental pollution levels in order to guarantee air, soil and water quality standards.

Source: https://www.ecolex.org/details/legislation/decree-no-802010-creating-the-national-agency-for-environmental-quality-control-aqua-lex-faoc112938/

ANAC – Administração Nacional das Áreas de Conservação [National Administration for Conservation Areas]

ANAC responsibilities include: to contribute to the increase of the environmental awareness, particularly regarding the biodiversity conservation and the massification of knowledge about the importance of the needed natural resources for our social-economical sustainable development. Its activities also include the planning, coordination and execution of activities in the conservation areas, in partnership with local organisations and communities.

Source: http://www.anac.gov.mz/en/anac/

FNDS – Fundo Nacional de Desenvolvimento Sustentável [National Fund for Sustainable Development]

FNDS has the responsibility to promote and finance programs and projects that support sustainable harmonious inclusive growth, satisfying current needs without compromising the ability of future generations to meet their own needs. Specifically:

- Assess current performance of different areas of responsibility of Board of Administration of the Fund;
- Diagnose organizational bottlenecks and propose the most efficient structure for the Fund;
- Develop clear models of decentralization (to the Provincial and District levels), including decision-making and fiduciary aspects;
- Propose tools to foster the integration and coordination among teams and projects;
- Develop the organigram and workflow charts based on changes agreed with the Council of Administration;
- Develop and support the implementation of a roadmap for the implementation of suggested changes, to be assessed against clear milestones and performance indicator.

Source: http://clubofmozambique.com/news/mozambican-government-creates-sustainable-development-fund/ ;https://wbgeconsult2.worldbank.org/wbgect/download?uuid=df510f4a-e5bf-4f23-ad38-b1649f14045d

ITADER – Inspeção da Terra, Ambiente e Desenvolvimento Rural [Inspectorate of Land, Environment and Rural Development]

The inspectorate arm of the MITADER.

Source: http://www.anac.gov.mz/wp-content/uploads/2017/07/Estatuto-Organico-do-MITADER.pdf;

DPTADER – Direcção Provincial da Terra, Ambiente e Desenvolvimento Rural [Provincial Directorate for Land, Environment and Rural Development] Cabo Delegado

The provincial offices of MITADER.

SDPI – Serviço Distrital de Planeamento e Infra-Estrutura [District Planning and Infrastructure Service]

The SDPI is a public entity responsible for the management and monitoring of the areas of planning and territorial planning, public works, infrastructure and equipment, transportation and transit, environmental management, emergency and service provision the level of the District.

Source: http://www.gaza.gov.mz/por/Ver-Meu-Distrito/Chibuto/SDPI-Servico-Distrital-de-Planeamento-e-Infra-Estrutura

MIREME – Ministério do Recursos Minerais e Energia [Ministry of Mineral Resources and Energy]

INP – Instituto Nacional de Petróleo [National Institute of Oil]

The INP is the regulatory entity responsible for administration and promotion of oil and gas operations and is responsible for:

- Regulation and auditing of oil and gas exploration, production and transport activity as well as ensuring policies for development and standards related to oil operations;
- Preservation of the public interest and the environment by establishing the required technical, commercial and environmental conditions, promoting the adoption of practices that encourage the efficient use of resources and the existence of quality standards that correspond to the service and protection of the environment; and
- Organization, maintenance and consolidation of the accuracy of technical data and information related to the activities of the oil industry, national oil reserves and the information produced.

INP has a delegation in Pemba, responsible for the regulation and auditing of oil and gas exploration, production and transport activities in northern Mozambique (including Cabo Delgado and Nampula Provinces).

Source: http://www.mzlng.com/content/documents/MZLNG/EIA/Volume_I/English/Chapter_2-_LNG_Final_EIA_Sept_2014_Eng.pdf

ENH – Empresa Nacional de Hidrocarbonetos [National Hydrocarbon Company]

ENH is established to perform all the activities related to petroleum resources, in particular to: research, explore, produce and sell crude oil, natural gas or other natural hydrocarbons in their physical state and derivatives, including import, storage, handling, transportation, etc.

Source: https://www.ecolex.org/details/legislation/decree-no-292015-approving-the-statute-of-the-national-hydrocarbons-company-ep-enh-lex-faoc152051/?q=ENH&xdate_min=&xdate_max=

IGREME (Inspeção Geral dos Recursos Minerais e Energia)

The functions of Inspector General of Mineral Resources and Energy:

- Organize and carry out inspections, investigations, audit and audits of the different activities related to the Mineral Resources sector and Energy;
- To inspect and monitor compliance with provisions regulations and standards of technical safety, hygiene protection of the environment, in accordance with the law, conventions and good international practice;
- To prepare studies, reports and opinions on matters within its competence;
- To inspect and audit the production facilities, transport, distribution and marketing of electric power, hydrocarbons and fuel, including storage and unloading facilities of fuels;
- Ensure, in coordination with other institutions, the protection of mineral resources and the smuggling, illegal trade and counterfeiting of mineral products, adulteration of products petroleum, vandalism of infrastructure;
- Ensure control of the oil spill and fuels;
- Institute proceedings and impose penalties payable in accordance with the legal provisions of the financial resources sector minerals and energy, within the scope of its powers.

Source: http://extwprlegs1.fao.org/docs/pdf/moz148270.pdf

MAGTAP Mining and Gas Technical Assistance Project

MAGTAP has the responsibility to: increase tax and economic benefits in the extractive industry;

- Establish a legal framework for economic, environmental and social sustainability of extractive industry;
- Increase transparency and accountability in the extractive industry by strengthening good governance;
- Support reforms, initiatives and institutional capacity building to improve the efficiency and accountability of the institutions involved in the planning and management of the mining and HCB sector.

MAGTAP's objective is to strengthen the capacity and governance systems of key institutions to manage the mining and hydrocarbon sectors in Mozambique, through governance capacity building and reform of mining and natural gas.

Source: http://www.magtap.gov.mz/eng/Magtap; http://www.projects.worldbank.org/P129847/mining-gas-technical-assistance-project?lang=en

MIMAIP – Ministério do Mar, Aguas Interiores e Pescas [Ministry of Sea, Inland Waters and Fisheries]

Presidential Decree n. 17/2015: Defines' Attributes and Competences to the Ministry of the Sea, Inland Waters and Fisheries, created by Presidential Decree nr. 1/2015, of 16 January, and repealing Presidential Decree No. 1/2000 of 17 January.

IIP – Instituto de Investigações Pesqueiras [Fisheries Research Institute]

The IIP has the responsibility to: develop research necessary for the scientific knowledge of the Mozambican waters, with a view to its management, conservation and optimization of its holding;

- The carrying out of environmental studies complementary to fisheries research;
- Experimentation of cropping techniques for the production of aquatic species, adapted to the environmental conditions of the country;
- The development of environmental studies in the fields of oceanography and limnology;
- The dissemination of information of a technical and important for the fishing industry;
- The carrying out of specific consultancies and studies or multidisciplinary projects related to its area of activity at the request of the fishing industry and others.

Source: https://www.ecolex.org/details/legislation/ministerial-order-no-2512011-approving-the-regulation-of-the-national-institution-for-fisheries-research-iip-lex-faoc117275/?q=IIP&xcountry=Mozambique&xdate_min=&xdate_max

INDPA – Instituto Nacional de Desenvolvimento da Pesca e Aquacultura [National Development Institute of Fisheries and Aquaculture]

INDPA has the responsibilities for designing statistical studies of expertise on fishing activities and developing infrastructure supporting small-scale fisheries and aquaculture and developing proposals.

Source: https://www.ecolex.org/details/legislation/decree-no-32016-creating-the-national-institute-for-fisheries-and-aquaculture-development-idepa-lex-faoc154229/?q=National+Development+Institute+of+Fisheries+and+Aquaculture+&xdate_min=&xdate_max

MGCAS – Ministério do Género, Criança e Acção Social [Ministry of Gender, Child and Social Action]

DNAS – Direcção Nacional de Acção Social [National Directorate of Social Action]

The functions of the National Directorate of Social Action are:

- Prepare and propose laws, policies, strategies, programs and social assistance plans for individuals and households family members in situations of poverty and vulnerability, and to carry out the dissemination, monitoring and evaluation implementation;
- Organize and direct social assistance actions family protection, with a view to their integration into the and in the community;
- promote the creation and coordination of institutions of people service homeless, vulnerable and vulnerable;
- To propose norms of operation of the institutions of target groups in poverty and vulnerability, as well as organize, direct and control its operation;
- To promote and carry out actions of sensitization and education respect for human rights and fundamental freedoms
- To promote and carry out actions of prevention, protection and support for victims of violence, discrimination and stigmatization, particularly the elderly and the elderly
- Propose the adoption and promote compliance with measures
- To guide and control the performance of organizations working in the area of social compliance with the norms of attendance to groups poverty and vulnerability;

Source: http://extwprlegs1.fao.org/docs/pdf/moz148229.pdf

MINISTÉRIO DOS NEGÓCIOS ESTRANGEIROS E COOPERAÇÃO [Ministry of Foreign Affairs and Cooperation]

INGC – Instituto Nacional de Gestão de Calamidades [National Institute of Disaster Management]

INGC has the responsibility to prevent natural disasters and to assist eventually injured people and infrastructures. INGC is responsible for:

- The management and coordination of the management of disasters, in particular in the prevention and relief of victims of calamities;
- Reducing the vulnerability of persons, infrastructure and goods exposed to the negative effects of disasters;
- Ensuring the rapid and efficient rehabilitation of human tissue and post-disaster infrastructures;
- To coordinate the implementation of the Master Plan of Prevention and Management of disasters approved by the Government;
- To design, formulate and propose to the Government, specific socio-economic development plans for the arid and semi-arid regions;
- Ensure the preparation and updating of Contingency Plans;
- In coordination with the Ministries of National Defence, Interior and other sectors and with civil society establish, operate and coordinate the National Civil Protection Unit (UNAPROC);
- Ensure the management of humanitarian assistance, so as to be channelled to the target populations and institutions, in useful time;
- Support and coordinate the participation of other entities involved in the mitigation of the effects of calamities and relief in case of national emergency;
- To direct the search and rescue operations in case of emergencies.

Source: https://www.ecolex.org/details/legislation/decree-no-522007-approving-the-national-institute-of-environmental-disasters-management-lex-faoc111213/?q=INGC&xcountry=Mozambique&xdate_min=&xdate_max=

MICULTUR – Ministério da Cultura e Turismo [Ministry of Culture and Tourism]

DINATUR – Direcção Nacional de Turismo [National Directorate of Tourism]

DINATUR was formed with the objective of: promoting development in the tourism sector, grading of tourism establishments, developing tourism special areas, promoting studies and development programs, promoting investment and tourism activities and developing training activities for the professionals of the tourism sector.

Source: http://www.inatur.org.mz/eng/About-Us/Inatur-Organs

MEF – Ministério da Economia e Finanças [Ministry of Economy and Finance]

INE – Instituto Nacional de Estatística [National Institute of Statistics]

INE is part of the Ministry of Finance of Mozambique (MF). INE is in charge of collecting census data and undertake regular surveys on different socio-economic related aspects. Currently INE is also starting to collect information on climate change related issues and information on hazard (impacts), specifically on drought, floods and epidemics.

Source: http://www.un-spider.org/links-and-resources/institutions/mozambique-national-institu

DNPO – Direcção Nacional de Planificação e Orçamento [National Directorate of Planning and Budgeting]

The DNPO is tasked with planning and budget functions, budget execution and ensuring financial sustainability. Its objective is to ensure citizen's participation in all phases of the budgetary process: from drafting and implementation to monitoring; and inform citizens about the relevant aspects of the State Budget in simple and accessible language. DNPO assesses budget proposals and has given wide discretion to the ministries in four sectors (education, health, agriculture and public works) to distribute resources between their provincial directorates.

Source: https://www.agora-parl.org/node/19173; http://gsdrc.org/docs/open/doc102.doc

MIC – Ministério da Indústria e Comércio [Ministry of Industry and Commerce]

MIC is principally responsible for oversight of the trade and industry sectors. Its responsibilities include:

- Oversight of implementation of the State's manufacturing sector policy;
- Encouragement, assistance and due location of entrepreneurial activities in the scope of the processing industry of national raw materials, in particular concerning production intended to replace imports or add greater value to exportable products;
- Promotion of initiatives towards recovering and upgrading the existing national industrial park as well as profitability of new investments;
- Oversight of State's policy in respect of agricultural trade, supply and provisions of services;
- Promotion of actions required for an efficient distribution of consumable goods and production factors;
- Oversight and boosting of the external trade in coordination with further State organisms; and
- Promotion of an entrepreneurial basis for exports in the country and encouragement of initiatives destined for increasing and diversifying exports.

MIC is represented at a provincial level by the Provincial Directorate of Trade and Industry. At a district level, issues related to the trade and industry sectors are the responsibility of the District Services of Economic Activities.

Source: http://www.mzlng.com/content/documents/MZLNG/EIA/Volume_I /English/Chapter_2-_LNG_Final_EIA_Sept_2014_Eng.pdf

MTC – Ministério dos Transportes e Comunicação [Ministry of Transport and Communication]

INAMAR – Instituto Nacional da Marinha [National Naval Institute] (MTC)

INAMAR is responsible for activity in the areas of maritime safety, protection of port facilities and vessels, maritime transport, negotiation and stowage, maritime personnel, preservation of the marine environment and maritime administration. This Institute is responsible, among others, for exercising maritime authority in maritime, lake and river jurisdictional areas, and in the public maritime domain, promoting the establishment and maintenance of maritime safety conditions for performing marine activities and promoting and encouraging specific and economic efficiency in the interest of the service providers and users. In the area of preservation of the marine environment, INAMAR is responsible for proposing legislation and regulations to prevent, reduce, control and combat pollution coming from vessels or from other floating or stationary resources at sea, directing and coordinating activities to prevent and fight marine pollution and participating in international forums to establish rules and standards in this respect. INAMAR is also responsible for authorizing and monitoring dredging activities at both ports and inland waters.

Source: http://www.mzlng.com/content/documents/MZLNG/EIA/Volume_I/English/Chapter_2LNG_Final_EIA_Sept_2014_Eng.pdf

INAHINA – Instituto Nacional de Hidrografía [National Institute of Hidrography] (MTC)

INAHINA is responsible for conducting technical and scientific activities in the context of oceanography, hydrography and maritime navigation in waters under national jurisdiction for the purpose of ensuring navigation and contributing to the development of the country in scientific areas and defence of the environment. INAHINA also provides technical recommendations to projects involving new dredging techniques, hydraulic maritime works and other works that could affect the hydrographic patterns of ports and coastlines.

Source: http://www.mzlng.com/content/documents/MZLNG/EIA/Volume_I /English/Chapter_2-_LNG_Final_EIA_Sept_2014_Eng.pdf

ANE – Agência Nacional de Estradas [National Road Agency]

The national road agency's roles is to rehabilitate and maintain country roads, also called feeder roads, belonging to the tertiary roads network which forms about half of the total road network of the country.

Source: www.ane.gov.mz/pdfs/Estatuto.pdf

MASA – Ministério da Agricultura e Segurança Alimentar [Ministry of agriculture and food security]

CENACARTA – Centro Nacional de Cartografia e Teledetecção [National Cartography and Remote Sensing Centre]

An independent public service centre under the Ministry of Agriculture. The main tasks of CENACARTA are to provide baseline GIS data, facilitate purchase of satellite data, and provide topographic and thematic maps. It is specialized in the treatment of geographic information and responsible for directing, coordinating and executing geo-cartographic and remote sensing activities at national level, disseminating remote sensing techniques in the country, acquiring, processing, and distributing geo-cartographic images and data obtained via satellite.

Sources: http://www.cenacarta.com/

http://www.un-spider.org/links-and-resources/institutions/mozambique-national-cartography-and-remote-sensing-centre-cencarta

PRIME MINISTER'S OFFICE

The National Council for Sustainable Development (CONDES)

CONDES was established by the 1997 Environment Law to promote and coordinate all sectoral efforts towards sustainable use of natural resources while promoting sustainable economic and social development. Its mandate is to promote dialogue on environment issues during the preparation of sector policies pertaining natural resources use and management and monitoring the implementation of all policies of relevance to environmental management. CONDES is assisted by a Secretariat constituted by two Ministry for the Coordination of Environmental Action (MICOA) staff members.[10]

CONDES is an advisory body of the Council of Ministers and is consulted for public hearings on environmental issues in order to ensure effective and proper coordination and integration of the principles and activities of environmental management in the development of the country. Therefore, CONDES is one of the principal instruments integrating sectoral and inter-sectoral and mainstreaming.

The functions of the National Council for Sustainable Development (CONDES) are: ensure effective and efficient coordination of the principles and activities of the environmental management in the country sustainable development process; Advice on policies related to Natural resources management; Analyse and comment on Law n° 20/97 complementary legislation proposals including the initiation of proposals or revision of all legislation related to natural resources of the country; Comment on environment related international convention ratification proposals; Design proposals for financial or any other incentive creation in order to stimulate economic agents to adopt environmental procedures in their daily use of country's natural resources; Display simplifying and speeding mechanisms in the process of licencing natural resources related activities; and Comment on conflicts of interests in matters related to environment.

CONDES is subordinate to the Prime Minister's Office and is constituted by Ministers and Vice-ministers from relevant sectors (agriculture, tourism, energy, mineral resources, planning and development, health, etc.) and chaired by the Minister of Environment. It is composed of the Prime Minister – President and 13 ministries. Three personalities appointed by the president of CONDES, based on the proposal of the Environment Minister; Three representatives of academic institutions; and Three representatives of the civil society and private sector.

Source: http://www.ncsds.org/index.php/sustainable-development-councils/country-profiles/85-country-profiles/178-mozambique

10 *It is unclear whether MITADER are mandated to participate.*

Contact details:
UN Environment Crisis Management Branch, Policy and Programme Division
International Environment House, Geneva, Switzerland
E-mail: postconflict@un.org