APPENDIX E: PROPOSED FORMAT FOR THE SEA IMPLEMENTATION PLAN

Mitigation of Environmental Impacts from Reconnaissance Activities

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Air Quality and Climate Change	**Main Existing Control Measures**										
	Adopting BAT (Air Quality Law # 78/2018 & Decree #10289/2013/PAR)	Operators									
	Compliance with Ambient Air Quality Standards (Decision No. 52/1/1996), Emission Limit Values for power generation (Decision No. 8/1/ 2001) and relevant international standards.	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Emergency response plan (ERP) is required according to PAR	Operators									
	Proposed Mitigation Measures										
	Use of Low-Sulphur Fuel instead of normal diesel for power generation	Operators									
	Ratification of MARPOL Annex 6 to decrease emissions from vessels	Government of Lebanon/MoE									
Seawater and Sediments	**Main Existing Control Measures**										
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge. The measures in these Annexes shall be adopted for the prevention of pollution by oil, chemical substances, sewage and garbage.	Operators									
	Barcelona Convention and its protocols (1976) provide mechanisms to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment (but require application decrees).	Operators									
	National Oil Spill Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Operators are required to prepare Emergency Response Plans (ERP) prior to starting any activity.	Operators									
	Vessel Monitoring System (VMS) that helps avoiding collision between vessels.	MoPWT									
	Proposed Mitigation Measures										
	Treat Wastes and Fluids before Discharge.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									

Mitigation of Environmental Impacts from Reconnaissance Activities

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	MOE to publish a list of approved oil dispersants allowed to be used in oil spill response (in line with NOSCP).	MoE									
	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Install equipment during non-productive Seasons.	Operators									
	Ensure VMS system is operational.	MoPWT									
	Main Existing Control Measures										
	Strict compliance with ACCOBAMS recommendations during reconnaissance activities; Operators should demonstrate how ACCOBAMS guidelines were taken into consideration in the design and implementation of such activities. The guidelines necessitate the employment of the following: - Big Air Bubble Curtains: a system that produces air bubbles under water breaking the propagation of sound waves - Little Air Bubble Curtain: A little bubble curtain can be customized and placed much closer to the big bubble curtain, it may consist of a rigid frame placed around of the source. Several configurations are possible. - Hydro Sound Damper: a technology consisting of fishing nets with small balloons filled with gas and foam (ensure Hydro Sound Damper equipment is retrieved and accounted for so that it does not contribute to marine debris) - Noise Mitigation Screen: a double-layered screen filled with air and bubbles - Visual monitoring protocol - Passive Acoustic Monitoring protocol (PAM): regularly used during a range of operations whether static or mobile to facilitate the detection of marine mammal species during times of limited visibility or darkness. - Marine Mammal Observation protocol - Soft start protocol: Noise emissions should begin at low power, increase gradually until full power is reached. The soft start procedure should be of 20 min duration at least. - Use of Acoustic Mitigation Devices (AMD): Prior to the beginning of the work, AMD should be used to drive away groups or individuals of marine mammals.	Operators									
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									

Mitigation of Environmental Impacts from Reconnaissance Activities

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Marine Biological Environment	Barcelona Convention and its protocols 1976 prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	Convention on Biological Diversity develops strategies for the conservation and the sustainable use of biological diversity.	Operators									
	The African-Eurasian Water-bird Agreement AEWA is an international agreement aiming to coordinate efforts to conserve bird species migrating between the regions.	Operators									
	The Ramsar Convention on Wetlands of International importance is an international agreement that sets regulations for the conservation and sustainable use of wetlands.	Operators									
	The National Biodiversity Strategy and Action Plan (NBSAP).	Operators									
	Decision 1044/1-2014 sets general conditions to protect cetaceans. Decision 396/1-2014 defines restrictions and regulations to limit and ban seabirds catching.	Operators									
	Proposed Mitigation Measures										
	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Conduct activities during non-productive Seasons.	Operators									
	The following procedures from IAGC /IOGP monitoring and mitigation measures for cetaceans during marine seismic survey geophysical operations should be adopted: • Procedure for commencement of operations • Procedure for interruptions to ongoing operations • Procedure for testing source elements	Operators									
	Take into consideration Standard Airgun Mitigation Procedure from JNCC guidelines for minimizing the risk of injury to marine mammals from geophysical surveys.	Operators									
	Operators to demonstrate that underwater noise levels and high risk areas are reduced to the minimum possible extent during drilling using ALARP methodology	Operators									
	Minimize cumulative effects from airguns operations through coordination with other similar activities in the East-Med.	MoEW/LPA/ Operators									
	Avoid activities in the vicinity of protected areas/areas proposed for protection and establishing a buffer zone around such areas. Buffer zones shall be determined in EIA studies.	Operators/LPA/MoE									
	Compliance with protected areas management plans.	Operators									
	Establish a code of conduct for operating in proximity to protected and sensitive areas.	Operators									
	Strict adherence to MARPOL requirements.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure towed equipment is free of alien species.	Operators									

Mitigation of Environmental Impacts from Reconnaissance Activities

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Ensure strict compliance with the Ballast Water Convention requirements and capacity of MoPWT to monitor such compliance.	Operators/ MoPWT									
Coastal Environment	**Main Existing Control Measures**										
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) provide mechanisms to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	The Ramsar Convention on Wetlands of International importance is an international agreement that sets regulations for the conservation and sustainable use of wetlands.	Operators									
	The draft Law for Integrated Coastal Zone Management of the Lebanese Coastal Zone establishes policies for coastal zone protection.	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements.	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Operators are required to submit ERPs and ensure readiness to comply with ERP prior to initiating any activities.	Operators									
	Proposed Mitigation Measures										
	Optimize travel trips and travel routes when transporting chemicals and wastes.	Operators									
	Transport of chemicals shall fulfil the requirements of IMDG Code for Dangerous Goods.	Operators									
	EIA studies shall detail the procedure to be adopted during transport of dangerous goods by sea to prevent accidental spillage of chemicals and intervene in case of accidents.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.ge disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Operators should prepare a chemicals management plan entailing handling, storage, transportation and response in case of accidents.	Operators									

Mitigation of Environmental Impacts from Reconnaissance Activities

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Chemical storage shall follow international standard in terms of packaging and labelling of products (GHS, CLP).	Operators									
	Each chemical must have its SDS.	Operators									
	Operators should develop a database to register chemical products. (quantity, uses, specific stored requirements, risks, PPE, etc.)	Operators									
	Main Existing Control Measures										
	Recommendations of ACCOBAMS Guidelines and suggested mitigation measures for noise control for offshore reconnaissance activities shall be followed.	Operators									
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) have instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	Convention on Biological Diversity develops strategies for the conservation and the sustainable use of biological diversity.	Operators									
	The draft Law for Integrated Coastal Zone Management of the Lebanese Coastal Zone establishes policies for coastal zone protection.	Operators									
	The Ministry of Environment's decision Number 8-1/2001 limits the effluent discharges to the sea.	Operators									
	The National Biodiversity Strategies and Action Plan (NBSAP).	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	Proposed Mitigation Measures										
Fisheries	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Conduct activities during non-productive Seasons.	Operators									
	Treat wastes and fluids before discharge.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Monitoring of chemical concentrations in edible fish and invertebrate tissue.	MoPH/ Operators									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Limit Exclusion Zones to Safety Zones	MoEW/LPA/ Operators									

Mitigation of Environmental Impacts from Reconnaissance Activities

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	In the case of a survey planned in an area of intensive fishing, discussions with Fisheries Associations shall be initiated as early as possible, and, in any case, at least 45 days before the planned date in order that the implications can be fully considered. A clear communication plan shall be developed and a fair compensation scheme in case of loss of equipment shall be proposed.	LPA/ Operators									
	Employment of on-board fisheries liaison personnel from the local community (subject to the completion of adequate safety training). These on-board personnel communicate with those operating vessels in the nearby area in order to advise of survey vessel movements over the next 24 to 48 hours, allowing close coordination with local fishers in order that the impacts on their activities and area restrictions are minimized.	Operators									
	Maintain exclusion zones around survey vessels and its towed streamer arrays to avoid interruption of commercial fishing operations.	Operators									
Ambient Noise Levels	**Main Existing Control Measures**										
	MoE Decision No. 52/1/1996, National maximum allowable noise levels and the permissible noise exposure standards.	Operators									
	Offshore blocks are located more than 3 nm away from the shoreline.	GoL									
	Locations for onshore support facilities should be selected in compliance with the National Land Use Master Plan.	Operators/LPA									
	Proposed Mitigation Measures										
	No additional mitigation measures are proposed.	-									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Air Quality and Climate Change	**Main Existing Control Measures**										
	Application of the Best Available Techniques (BAT) as stipulated by the Air Quality Protection law (78/2018) to minimize the impact on air quality.	Operators									
	Compliance with Ambient Air Quality Standards (Decision No. 52/1/1996), Emission Limit Values for power generation (Decision No. 8/1/ 2001) and relevant international standards.	Operators									
	An emission permit is to be obtained from MoE as per law 78/2018 (in the absence of the permit, such permission is obtained via the EIA process)	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Emergency response planning is required according to PAR	Operators									
	Flaring or venting and all types of Air Emissions release is subject to a permit from Ministry of Energy and Water and Emergency Flaring requires registration and reporting to the Minister within 24 hours from occurrence.	Operators									
	The Ministry of Environment's Decision Number 99-1/2013 regarding the submission of information on Green House Gas emissions for all facilities.	Operators									
	Proposed Mitigation Measures										
	Ensure enforcement of BAT as required by Law 78/2018 (Air Quality Protection Law) and Decree No. 10289/2012 (PAR); this requires proper training of MoE and LPA personnel on BAT applicable to the offshore oil and gas industry and the review of BAT demonstration in EIA studies; MoE needs to ensure that BAT is integrated in design of facilities, implemented and properly maintained during operation	Operators/MoE									
	Use of Green diesel instead of Marine Gasoil where technically feasible; green diesel has a significantly lower sulfur content	Operators									
	Fuel efficiency measures shall be taken in the selection process for platform, support vessels and helicopters, where possible.	Operators									
	Ratification of MARPOL Annex 6 to decrease emissions from vessels.	Government of Lebanon/MoE									
	Regular check for leaks with latest technology and take prompt action	Operators									
	Explore possibilities for the implementation of Decree No. 167/2017 that provides incentives for environmental investments and assess its applicability to the offshore E&P sector	Operators/LPA/MoE									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Seawater and Sediments	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) have instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Operators are required to prepare ERPs and demonstrate readiness to implement it prior to initiating any activity.	Operators									
	The Ministry of Environment's decision Number 8-1/2001 limits the effluent discharges to the sea.	Operators									
	Proposed Mitigation Measures										
	Operators to strictly comply with the waste management recommendations	Operators									
	Land Treatment of Spoils and Waste Materials from Dredging Operations and avoid disposal at Sea.	Operators									
	Use of Silt Curtains allowing suspended matter to settle before removal of the curtains.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure safety critical equipment and processed are in place and operational prior to start of drilling activities	Operators									
	MOE to publish a list of approved oil dispersants allowed to be used in oil spill response (in line with NOSCP).	MoE									
	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Conduct activities during non-productive Seasons.	Operators									
	Land Treatment of Spoils and Waste Materials from Dredging Operations and avoid disposal at Sea.	Operators									
	Avoid drilling on the Continental Slope.	Operators									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	If activities in the continental slope/shelf are not avoidable, detailed eco-toxicological assessments need to be conducted to assess risk levels and obtain approval from Ministry of Environment.	Operators									
	Main Existing Control Measures										
	The Ballast Water Management Convention (2004) establishes standards, procedures and guidelines for the management and control of ships' ballast water and sediments.	Operators									
	Recommendations of ACCOBAMS Guidelines and suggested mitigation measures for noise control for offshore petroleum activities shall be followed. The guidelines necessitate the employment of the following: - Big Air Bubble Curtains: a system that produces air bubbles under water breaking the propagation of sound waves - Little Air Bubble Curtain: A little bubble curtain can be customized and placed much closer to the big bubble curtain, it may consist of a rigid frame placed around of the source. Several configurations are possible. - Hydro Sound Damper: a technology consisting of fishing nets with small balloons filled with gas and foam (ensure Hydro Sound Damper equipment is retrieved and accounted for so that it does not contribute to marine debris) - Noise Mitigation Screen: a double-layered screen filled with air and bubbles - BEKA shells: double steel wall with intern and outer bubble curtains and acoustic decoupling - Visual monitoring protocol - Passive Acoustic Monitoring protocol (PAM): regularly used during a range of operations whether static or mobile to facilitate the detection of marine mammal species during times of limited visibility or darkness. - Marine Mammal Observation protocol - Soft start protocol: Noise emissionsshould begin at low power, increase gradually until full power is reached. The soft start procedure should be of 20 min duration at least. - Use of Acoustic Mitigation Devices (AMD): Prior to the beginning of the work, AMD should be used to drive away groups or individuals of marine mammals. -	Operators									
	Barcelona Convention and its protocols (1976) establishes instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Marine Biological Environment	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	The African-Eurasian Water-bird Agreement AEWA is an international agreement aiming to coordinate efforts to conserve bird species migrating between the regions.	Operators									
	The Ramsar Convention on Wetlands of International importance is an international agreement that sets regulations for the conservation and sustainable use of wetlands	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Operators are required to develop an ERP and demonstrate readiness to implement it prior to starting any activity.	Operators									
	The Ministry of Environment's decision Number 8-1/2001 limits the effluent discharges to the sea.	Operators									
	The National Biodiversity Strategy and Action Plan (NBSAP).	Operators									
	Decision 1044/1-2014 sets general conditions to protect cetaceans.	Operators									
	Decision 396/1-2014 defines restrictions and regulations to limit and ban seabirds catching.	Operators									
Proposed Mitigation Measures											
	Strict adherence to MARPOL requirements.	Operators									
	Strict adherence to the Ballast Water Convention.	Operators									
	Ensure operators consider applicable ACCOBAMS recommendations for noise reduction and demonstrate that underwater noise levels and high risk areas are reduced to the minimum possible extent during drilling using ALARP methodology	Operators/MoE									
	Avoid drilling and production facilities in environmental and socially sensitive areas, including the continental shelf and slope; drilling and production in protected areas are prohibited.	Operators									
	Operators to strictly comply with the waste management recommendations	Operators									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Conduct risk assessments in line with international best practice for drilling and production facilities and ensure that safety critical equipment and processes are in place prior to start of activities.	Operators/LPA									
	Optimize travel trips and travel routes when transporting chemicals and wastes	Operators									
	Develop a Chemical Management Framework at the national level and Chemical Management Plans for activities.	Operators									
	Mapping of seagrass meadows in Lebanese shallow waters shall be conducted prior to activities.	MoE									
	Transport of chemicals shall fulfil the requirements of IMDG Code for Dangerous Goods.	Operators									
	EIA studies shall detail the procedure to be adopted during transport of dangerous goods by sea to prevent accidental spillage of chemicals and intervene in case of accidents.	Operators									
	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Conduct activities during non-productive Seasons.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure MoPWT has the resources to supervise compliance with Ballast Water Convention	GoL/MoPWT									
	If activities in the continental slope/shelf are not avoidable, detailed eco-toxicological assessments need to be conducted to assess risk levels and obtain approval from Ministry of Environment.	Operators									
	Drilling and production within protected areas are prohibited	Operators									
	Avoid activities in the vicinity of protected areas/areas proposed for protection and establishing a buffer zone around such areas. Buffer zones shall be determined in EIA studies.	Operators									
	Compliance with protected areas management plans.	Operators									
	Establish a code of conduct for operating in proximity to protected and sensitive areas.	Operators									
	Land Treatment of Spoils and Waste Materials from Dredging Operations and avoid disposal at Sea.	Operators									
	Main Existing Control Measures										
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Barcelona Convention and its protocols (1976) establish instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	The Ramsar Convention on Wetlands of International importance is an international agreement that sets regulations for the conservation and sustainable use of wetlands.	Operators									
	The draft Law for Integrated Coastal Zone Management of the Lebanese Coastal Zone establishes policies for coastal zone protection.	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
Coastal Environment	Operators are required to prepare ERPs and demonstrate readiness for their implementation prior to initiating any activities.	Operators									
Proposed Mitigation Measures											
	Optimize travel trips and travel routes when transporting chemicals and wastes	Operators									
	Transport of chemicals shall fulfil the requirements of IMDG Code for Dangerous Goods.	Operators									
	EIA studies shall detail the procedure to be adopted during transport of dangerous goods by sea to prevent accidental spillage of chemicals and intervene in case of accidents.	Operators									
	Land Treatment of Spoils and Waste Materials from Dredging Operations and avoid disposal at Sea.	Operators									
	Disposal of Spoils and Waste Materials from Dredging Operations beyond the Continental Shelf.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure that safety critical equipment and processes are in place and operational prior to start of drilling	Operators/LPA									
	Operators should prepare a chemicals management plan entailing handling, storage, transportation and response in case of accidents.	Operators									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Update the management plan of the Tyre Coast Nature Reserve to define the management approach within the protected zone of the territorial waters as stipulated in the Reserve's establishment law.	MoE									
	Main Existing Control Measures										
	• Recommendations of ACCOBAMS Guidelines and suggested mitigation measures for noise control for offshore petroleum activities shall be followed (listed above in the table).	Operators									
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) establish instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	The draft Law for Integrated Coastal Zone Management of the Lebanese Coastal Zone establishes policies for coastal zone protection.	Operators									
	The Ministry of Environment's decision Number 8-1/2001 limits the effluent discharges to the sea.	Operators									
	The National Biodiversity Strategy and Action Plan (NBSAP).	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	Proposed Mitigation Measures										
	Operators to strictly comply with the waste management recommendations	Operators									
	Optimize travel trips and travel routes when transporting chemicals and wastes	Operators									
	Transport of chemicals shall fulfil the requirements of IMDG Code for Dangerous Goods.	Operators									
Fisheries	EIA studies shall detail the procedure to be adopted during transport of dangerous goods by sea to prevent accidental spillage of chemicals and intervene in case of accidents.	Operators									
	Operators should prepare a chemicals management plan entailing handling, storage, transportation and response in case of accidents.	Operators									
	Chemical storage shall follow international standard in terms of packaging and labelling of products (GHS, CLP).	Operators									
	Each chemical must have its SDS.	Operators									

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Operators should develop a database to register chemical products. (quantity, uses, specific stored requirements, risks, PPE, etc.)	Operators									
	Monitoring of chemical concentrations in edible fish and invertebrate tissue.	MoPH/ Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure that safety critical equipment and processes are in place and operational prior to start of drilling	Operators/LPA									
	Limit Exclusion Zones to Safety Zones	MoEW/LPA/ Operators									
	At the time of submitting a well plan for approval, operators shall inform fishermen through the Fisheries Associations. In addition, in the case of a well-planned in an area of intensive fishing, discussions with the Fisheries Associations must be initiated as early as possible, and preferably not less than 90 days before planned commencement of drilling.	Operators									
	Regional baseline studies should be conducted by independent scientists/resource agencies to the extent possible prior to any licenses being offered so that sensitive resources can be better defined in each block	MoE/MoEW/LPA									
Ambient Noise Levels	**Main Existing Control Measures**										
	MoE Decision No. 52/1/1996, National maximum allowable noise levels and the permissible noise exposure standards.	Operators									
	Offshore blocks are located more than three (3) nm away from the shoreline.	Operators									
	Locations for onshore support facilities should be selected in compliance with the National Land Use Master Plan.	Operators/LPA									
	Proposed Mitigation Measures										
	No additional mitigation measures are proposed.	-									

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Air Quality and Climate Change	**Main Existing Control Measures**										
	Demonstration of the use of Best Available Technologies (BAT) is required by the Air Quality Law #78/2018.	Operators									
	Air emissions release is subject to a permit obtained from the Ministry of Environment under the Air Quality Law # 78/2018.	Operators									
	Compliance with Ambient Air Quality Standards (Decision No. 52/1/1996), Emission Limit Values for power generation (Decision No. 8/1/ 2001) and relevant international standards.	Operators									
	The Ministry of Environment's Decision Number 99-1/2013 regarding the submission of information on Green House Gas emissions for all facilities.	Operators									
	Application of the Best Available Techniques (BAT) as stipulated by the Air Quality Protection law (78/2018) to minimize the impact on air quality	Operators									
	Flaring or venting and all types of Air Emissions release is subject to a permit from Ministry of Environment and Water and Emergency Flaring requires registration and reporting to the Minister within 24 hours from occurrence.	Operators									
	National Oil Spill Contingency Plan.	Operators/ Concerned authorities as per the NOSCP									
	Operators are required to prepare an ERP and demonstrate readiness to implement it prior to start of any activities.	Operators									
	Proposed Mitigation Measures										
	Ensure enforcement of BAT as required by Law 78/2018 (Air Quality Protection Law) and Decree No. 10289/2012 (PAR); this requires proper training of MoE and LPA personnel on BAT applicable to the offshore oil and gas industry and the review of BAT demonstration in EIA studies; MoE/LPA needs to ensure that BAT is integrated, implemented and properly maintained during operation	Operators									
	Use of Green diesel instead of Marine Gasoil where technically feasible; green diesel has a significantly lower sulfur content	Operators									
	Fuel efficiency measures shall be taken in the selection process for platform, support vessels and helicopters.	Operators									
	Controlling and reducing fugitive emissions in the design, operation, and maintenance of offshore facilities through the selection of appropriate valves, flanges, fittings and seals	Operators									
	Ratification of MARPOL Annex 6 to decrease emissions from vessels.	Government of Lebanon/MoE									
	Compliance with USEPA regulations regarding Leak Detection and Repair (LDAR), namely: 40 CFR Part 60 Subpart OOOO; 40 CFR Part 60 Subpart OOOOa, and the final Rule: Federal Register Vol.81 No. 107, June 3, 2016, EPA 40 CFR Part 60 (Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources)	Operators									
	Enactment of the draft decree related to National Fund for the Environment.	Government of Lebanon/MoE									

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Regular check for leaks with latest technology and take prompt action	Operators									
	Implementation of the Paris Agreement	Operators/MoEW									
	Operators should offset a portion of their emissions during production (15% is recommended as a minimum, in line with NDC commitments); such offset could be done by directly financing renewable energy projects and energy efficiency initiatives, reforestation (or enhancement of carbon sinks) and/or contributing in local funds (such as the BDL scheme of NEEREA or any subsequent similar frameworks, including the National Fund for the Environment) or any combination of the above; if development plans lead to excessive GHG emissions negatively affecting Lebanon's national commitments, then offset plans should compensate the additional emissions in a way to ensure meeting the unconditional emissions reduction targets set by the government	Operators									
	Enhance the capacity of the MoE to ensure that BAT is integrated in the design of production facilities and is properly implemented	GoL/MoEW/LPA									
	GHG emissions reduction demonstrations are mandatory as part of EIA studies (demonstrating that GHG emissions were reduced to the maximum extent possible before incremental emissions reduction costs become excessive)	Operators									
	Mandatory GHG emissions reporting from operators	Operators									
	Explore possibilities for the implementation of Decree 167/2017 that provides incentives for environmental investments and assess its applicability to the offshore E&P sector	Operators/LPA/MoE									
	Ensure Energy efficiency concepts are integrated in design, operations and maintenance of production facilities	Operators									
	Consider introduction of renewable energy technologies to the E&P activities.	Operators									
	On the longer term, and as production fields become available, carbon capture and sequestration initiatives should be consideredas part of their development and production plans.	Operators									
	Main Existing Control Measures										
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) establish instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements.	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Seawater and Sediments	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Operators need to prepare an ERP and demonstrate readiness to implement it prior to starting any activity.	Operators									
	The Ministry of Environment's decision Number 8-1/2001 limits the effluent discharges to the sea.	Operators									
	Proposed Mitigation Measures										
	Operators to strictly comply with the waste management recommendations in section Huru$Uhihuhqfh#vrxufh#qrw#irxqg1	Operators									
	Land Treatment of Spoils and Waste Materials from Dredging Operations and avoid disposal at Sea.	Operators									
	Use of Silt Curtains allowing suspended matter to settle before removal of the curtains.	Operators									
	Disposal of Spoils and Waste Materials from Dredging Operations beyond the Continental Shelf.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure safety critical equipment and processes are in place and operational prior to start of activities	Operators/LPA									
	MOE to publish a list of approved oil dispersants allowed to be used in oil spill response (in line with NOSCP).	MoE									
	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Conduct activities during non-productive Seasons.	Operators									
	Avoid drilling activities in the continental slope.	Operators									
	Avoid discharge of drill cuttings and fluids in the continental slope.	Operators									
	Avoid activities and equipment installation on the continental slope (except for pipelines).	Operators									
	If activities in the continental slope/shelf are not avoidable, detailed eco-toxicological assessments need to be conducted to assess risk levels and obtain approval from Ministry of Environment.	Operators									
	Main Existing Control Measures										
	The Ballast Water Management Convention (2004) establishes standards, procedures and guidelines for the management and control of ships' ballast water and sediments.	Operators									
	Recommendations of ACCOBAMS Guidelines and suggested mitigation measures for noise control for offshore petroleum activities shall be followed. The guidelines necessitate the employment of the following: - Big Air Bubble Curtains: a system that produces air bubbles under water breaking the propagation of sound waves										

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Marine Biological Environment	- Little Air Bubble Curtain: A little bubble curtain can be customized and placed much closer to the big bubble curtain, it may consist of a rigid frame placed around of the source. Several configurations are possible. - Hydro Sound Damper: a technology consisting of fishing nets with small balloons filled with gas and foam (ensure Hydro Sound Damper equipment is retrieved and accounted for so that it does not contribute to marine debris) - Noise Mitigation Screen: a double-layered screen filled with air and bubbles - BEKA shells: double steel wall with intern and outer bubble curtains and acoustic decoupling - Visual monitoring protocol - Passive Acoustic Monitoring protocol (PAM): regularly used during a range of operations whether static or mobile to facilitate the detection of marine mammal species during times of limited visibility or darkness. - Marine Mammal Observation protocol - Soft start protocol: Noise emissionsshould begin at low power, increase gradually until full power is reached. The soft start procedure should be of 20 min duration at least. - Use of Acoustic Mitigation Devices (AMD): Prior to the beginning of the work, AMD should be used to drive away groups or individuals of marine mammals.	Operators									
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) establish instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	The African-Eurasian Water-bird Agreement AEWA is an international agreement aiming to coordinate efforts to conserve bird species migrating between the regions.	Operators									
	The Ramsar Convention on Wetlands of International importance is an international agreement that sets regulations for the conservation and sustainable use of wetlands.	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Environment	Operators are required to develop an ERP and demonstrate readiness to implement it prior to start of any activities.	Operators									
	The Ministry of Environment's decision Number 8-1/2001 limits the effluent discharges to the sea.	Operators									
	The National Biodiversity Strategy and Action Plan (NBSAP).	Operators									
	Proposed Mitigation Measures										
	Strict adherence to MARPOL requirements.	Operators									
	Strict adherence to the Ballast Water Convention.	Operators									
	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Conduct activities during non-productive Seasons.	Operators									
	Ensure operators consider applicable ACCOBAMS recommendations for noise reduction and demonstrate that underwater noise levels and high risk areas are reduced to the minimum possible extent during drilling using ALARP methodology	Operators/MoE									
	Operators to strictly comply with the waste management recommendations in section Huuru$Uhihuhqfh#vrxufh#qrw#irxqg1#	Operators									
	Optimize travel trips and travel routes when transporting chemicals and wastes	Operators									
	Adopt international standards in the transportation of chemicals to minimize the risks of spills	Operators									
	Transport of chemicals shall fulfil the requirements of IMDG Code for Dangerous Goods.	Operators									
	EIA studies shall detail the procedure to be adopted during transport of dangerous goods by sea to prevent accidental spillage of chemicals and intervene in case of accidents.	Operators									
	Operators should prepare a chemicals management plan entailing handling, storage, transportation and response in case of accidents.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure safety critical equipment and processes are in place and operational prior to start of activities	Operators/LPA									
	Ensure MoPWT has needed capacity to monitor compliance with Ballast Water Convention	GoL/MoPWT									
	Avoid activities on the continental slope (except pipeline laying).	Operators									
	If activities in the continental slope/shelf are not avoidable, detailed eco-toxicological assessments need to be conducted to assess risk levels and obtain approval from Ministry of Environment.	Operators									
	Drilling and production within protected areas are prohibited	Operators									
	Avoid activities in the vicinity of protected areas/areas proposed for protection and establishing a buffer zone around such areas. Buffer zones shall be determined in EIA studies.	Operators/MoE									
	Update the management plan of the Tyre Coast Nature Reserve to define the management approach within the protected zone of the territorial waters as stipulated in the Reserve's establishment law.	MoE									
	Compliance with protected areas management plans.	Operators									

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Mapping of seagrass meadows in Lebanese shallow waters shall be conducted prior to activities.	MoE									
	Establish a code of conduct for operating in proximity to protected and sensitive areas.	Operators									
	Land Treatment of Spoils and Waste Materials from Dredging Operations and avoid disposal at Sea.	Operators									
	Use of Silt Curtains allowing suspended matter to settle before removal of the curtains.	Operators									
	Disposal of Spoils and Waste Materials from Dredging Operations beyond the Continental Shelf.	Operators									
Coastal Environment	**Main Existing Control Measures**										
	MARPOL Annex I provide regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) establish instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	The Ramsar Convention on Wetlands of International importance is an international agreement that sets regulations for the conservation and sustainable use of wetlands.	Operators									
	The draft Law for Integrated Coastal Zone Management of the Lebanese Coastal Zone establishes policies for coastal zone protection.	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP									
	Operators are required to prepare an ERP and demonstrate readiness to implement it prior to start of any activities.	Operators									
	Proposed Mitigation Measures										
	Optimize travel trips and travel routes when transporting chemicals and wastes	Operators									
	Transport of chemicals shall fulfil the requirements of IMDG Code for Dangerous Goods.	Operators									
	EIA studies shall detail the procedure to be adopted during transport of dangerous goods by sea to prevent accidental spillage of chemicals and intervene in case of accidents.	Operators									
	Operators should prepare a chemicals management plan entailing handling, storage, transportation and response in case of accidents.	Operators									

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Land Treatment of Spoils and Waste Materials from Dredging Operations and avoid disposal at Sea.	Operators									
	Use of Silt Curtains allowing suspended matter to settle before removal of the curtains.	Operators									
	Disposal of Spoils and Waste Materials from Dredging Operations beyond the Continental Shelf.	Operators									
	Consider ecologically sensitive areas in the routing and siting of such systems	Operators									
	Update the management plan of the Tyre Coast Nature Reserve to define the management approach within the protected zone of the territorial waters as stipulated in the Reserve's establishment law.	MoE									
	Evaluation of time of year restrictions on operations in the EIA to address sensitive life stages of important species in each proposed project area. Conduct activities during non-productive Seasons.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure safety critical equipment and processes are in place and operational prior to start of activities	Operators/LPA									
	Main Existing Control Measures										
	• Recommendations of ACCOBAMS Guidelines and suggested mitigation measures for noise control for offshore petroleum activities shall be followed (listed above in the table).	Operators									
	MARPOL Annex I provides regulations governing engine room oil and diesel waste and the discharges from all types of ships. Annex II of the MARPOL details the discharge criteria for the elimination of pollution by noxious liquid substances and chemicals. MARPOL Annex IV and V introduce requirements to control pollution by sewage from ships and to regulate garbage and marine debris discharge.	Operators									
	Barcelona Convention and its protocols (1976) establish instruments to prevent, abate and monitor water pollution from ships and onshore recourses including discharges and wastes.	Operators									
	The draft Law for Integrated Coastal Zone Management of the Lebanese Coastal Zone establishes policies for coastal zone protection.	Operators									
	The Ministry of Environment's decision Number 8-1/2001 limits the effluent discharges to the sea.	Operators									
	The National Biodiversity Strategy and Action Plan (NBSAP).	Operators									
	Decree No. 10289/2013 (PAR) determines Environmental protection requirements and protected areas requirements	Operators									
	Law No. 444 /2002 for Environmental Protection entails articles related to the protection of marine environment and the requirements for discharge permits.	Operators									
	Proposed Mitigation Measures										
Fisheries											

Mitigation of Environmental Impacts during Production Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Fisheries	Operators to strictly comply with the waste management recommendations in section Huru$Uhihuhqfh#vrxufh#qr#irxqg1	Operators									
	Optimize travel trips and travel routes when transporting chemicals and wastes.	Operators									
	Transport of chemicals shall fulfil the requirements of IMDG Code for Dangerous Goods.	Operators									
	EIA studies shall detail the procedure to be adopted during transport of dangerous goods by sea to prevent accidental spillage of chemicals and intervene in case of accidents.	Operators									
	Operators should prepare a chemicals management plan entailing handling, storage, transportation and response in case of accidents.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with the ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and exercisese.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Ensure that safety critical equipment and processes are in place and operational prior to start of activities	Operators/LPA									
	Monitoring of chemical concentrations in edible fish and invertebrate tissue.	MoPH/Operators									
	Limit Exclusion Zones to Safety Zones	MoEW/LPA/ Operators									
	At the time of submitting a well plan for approval, operators shall inform fishermen through the Fisheries Associations. In addition, in the case of activities planned in an area of intensive fishing, discussions with the Fisheries Associations must be initiated as early as possible, and preferably not less than 90 days before planned commencement of activity.	Operators									
Ambient Noise Levels	**Main Existing Control Measures**										
	MoE Decision No. 52/1/1996, National maximum allowable noise levels and the permissible noise exposure standards.	Operators									
	Offshore blocks are located more than three (3) nm away from the shoreline.	-									
	Locations for onshore facilities should be selected in compliance with the National Land Use Master Plan.	Operators/MoEW/LPA									
	Proposed Mitigation Measures										
	Select locations of onshore facilities in line with the National Land Use Master Plan (petroleum related facilities should be located in areas designated as industrial and not in residential areas)	Operators/MoEW/LPA									
	Enclose the noise source at onshore facilities and add noise barriers or noise berms, as applicable	Operators									
	The combined sound pressure level of equipment shall not exceed 85 dBA at a distance of 1 m from the equipment in all directions.	Operators									
	Noise modelling study shall be prepared as part of the environmental impact assessment study for the processing facilities and LNG terminals.	Operators									
	Frequency of helicopter trips should be scheduled in a way to avoid significant noise impacts to nearby receptors at the point of take-off and landing	Operators									

Mitigation of Environmental Impacts during Decommissioning

Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Main Existing Control Measures										
PAR (Decree No.10289/ 2013) requirements for the preparation of a plan for the cessation of petroleum activities and the decommissioning of facilities including an EIA study	Operators									
PAR (Decree No. 10289/ 2013) decommissioning measures in the event of cessation of production before a plan for decommissioning has been approved	Operators									
Proposed Mitigation Measures										
A preliminary decommissioning plan for offshore facilities should be developed that considers well abandonment, removal of oil from flowlines, facility removal, and sub-sea pipeline decommissioning along with disposal options for all equipment and materials. This plan can be further developed during field operations and fully defined in advance of the end of field life. The plan should include details on the provisions for the implementation of decommissioning activities and arrangements for post decommissioning monitoring and aftercare.	Operators									
Licensees should be required to follow international best practice for safe structure removal including monitoring for marine mammals and turtles if explosives are to be used.	Operators									
Marine fouling should preferably be removed while the installation is still offshore. Oil, scale, structural water and ballast water should if possible be removed while the installation is still offshore Hazardous waste must be suitably packaged, pipelines must be plugged, and good routines must be in place for labelling, packaging and sorting waste.	Operators									
Decommissioning facilities (on shore) must be designed to allow safe handling of different types of waste, including hazardous waste such as heavy metals and NORM wastes, with no risk of runoff or infiltration into the soil. In addition, a decommissioning facility should have an effective collection system and an on-site treatment plant for contaminated water, including surface water. Each facility must have a sampling and analysis programme to monitor releases of the most relevant pollutants. The need for an environmental monitoring programme to follow developments in the recipient should also be considered. Other factors that must be closely monitored at decommissioning facilities include noise and releases to air in connection with metal cutting and other operations. Moreover, decommissioning contracts must ensure that the costs of handling hazardous waste are met by the offshore operators.	Operators									

Mitigation of Socio-Economic Impacts

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Main Existing Control Measures										
	OPRL, Article 67on Local content requirements.	LPA/Operators									
	PAR, Article 148: If the Right Holder in the course of Petroleum Activities causes a) limitation in or disturbance of activities and rights, fishing fields or occupied land; or b) limitations in aquaculture activities; or c) fishing or aquaculture equipment to be moved to less favourable locations as seen from a maritime resource management or commercial point of view; then the Right Holder shall compensate the physical or legal person affected by such demonstrable disturbance or damage. The same applies with regard to liability and claims if the vessel(s) or craft(s), equipment, catch or harvest of a physical or legal person is polluted, damaged or lost due to Petroleum Activities.	Operators									
	PAR, Article 157: The Right Holder shall ensure that the Operator gives preferential treatment to the procurement of Lebanese originating goods and services when such goods and services are internationally competitive with regard to quality, availability, price and performance. Lebanese originating goods and services are those that in substance or measured by value added are predominantly manufactured, constructed or performed in Lebanon, by Lebanese or by an entity owned and controlled by Lebanese.	Operators									
	PAR: Emergency Response Plan.	Operators									
Social Conditions	EPA, Article 20 on Recruitment and Training stipulates that: as of the beginning of the Exploration Phase, not less than eighty per cent (80%) of the aggregate number of employees of the Right Holders (including the Operator) shall be Lebanese nationals.	LPA/Operators									
	Environmental standards and health and safety standards	Operators									
	The establishment of the sovereign wealth fund.	GoL									
	Having a modern fiscal regime.	GoL/MoF									
	National Oil Spill Contingency Plan.	Operators/ Concerned authorities as per the NOSCP									
	Proposed Mitigation Measures										
	Ensure transparent and realistic communication between the petroleum sector and Lebanese society.	LPA									
	To provide realistic expectations of the general population, responsible authorities must raise the awareness on the topic.	GoL/LPA									
	All potential limitations to other industries (e.g. fisheries) must be well communicated to impacted target groups and compensated. For this the petroleum sector must establish appropriate modality.	LPA/MoA									
	Ensure transparent governance and operation of sovereign wealth fund.	GoL									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and excercises e.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA									
	Promote Corporate Social Responsibility (CSR) practices in the sector.	LPA/ Operators									
	Ensure safety critical equipment and processes are in place and operational prior to start of activities.	Operators/LPA									

Mitigation of Socio-Economic Impacts

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	Develop a national grievance mechanism.	GoL/LPA									
Health	**Main Existing Control Measures**										
	Adopting BAT	Operators									
	Environmental standards and health and safety standards	Operators									
	National Oil Spill Contingency Plan	Operators/ Concerned authorities as per the NOSCP									
	PAR: Emergency Response Plan	Operators									
	Proposed Mitigation Measures										
	Air emissions from petroleum activities to be minimized following BAT principles.	Operators									
	Avoid discharges to the sea if technically feasible. If discharge options are selected, the highest level of treatment (BAT) before discharge must be ensured and eco-toxicological studies to be conducted as part of EIA studies according to internationally recognized methods and standards.	Operators									
	Monitoring of chemical concentrations in edible fish and invertebrate tissue to support human health advisories.	Operators/MoPH									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and excercises e.g disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA									
	Ensure safety critical equipment and processes are in place and operational prior to start of activities.	Operators/LPA									
	Ensure that a robust health surveillance system is maintained to monitor possible health impacts from the sector as it develops and allow corrective measures to be made in a timely manner.	GoL/MoPH									
	Ensure the healthcare sector is able to accommodate health conditions related to the sector (such as psychological or mental impacts due to sustained work offshore, etc.)	GoL/MoPH									
	Main Existing Control Measures										
	OPRL, Article 67: A Right Holder as well as its subcontractors shall employ qualified personnel of Lebanese nationality whenever available. Right Holder shall also organise and fund the training of Lebanese personnel associated with Petroleum Activities.	Operators/LPA									
	PAR, Article 155: Qualification and Training of Personnel: The Right Holder and contractor shall give priority to training of Lebanese in order to facilitate the employment of Lebanese at all level of Right Holder's or contractor's organisations. The Right Holder shall in consultation with the Minister, propose and carry out an effective recruitment and training program for Lebanese personnel for each phase of the Petroleum Activity and at all levels of management, taking into account the safety requirements and the need to maintain reasonable standards of efficiency in the conduct of Petroleum Activities. Such employees may be trained in the Republic of Lebanon or abroad as required by the training programs prepared. The Right Holder shall equally ensure that all personnel, including contractors' personnel have adequate training and experience in dealing with emergency situations.	Operators									

Mitigation of Socio-Economic Impacts

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Education	EPA, Article 20: The Right Holders shall develop and carry out an effective recruitment and training program for Lebanese personnel in accordance with the law no 132/2010. Operator shall employ, and cause all Contractors and Subcontractors to employ, qualified personnel of Lebanese nationality whenever available. The Right Holders shall fund the training of Lebanese personnel associated with Petroleum Activities. Each Exploration Plan and Development and Production Plan shall include a plan for the hiring and training of persons of Lebanese nationality, including hiring and training of management, engineering and other professional staff.	Operators									
	Proposed Mitigation Measures										
	To provide realistic expectations of the general population, responsible authorities must raise the awareness on the actual potential for job creation of the sector.	LPA									
	Responsible authorities should prepare a strategy linked to development of sector specific educational programmes, both from the quality and admittance quantity point of view.	LPA/MoEHE									
	Sector developers can cooperate with educational institutions to guide the type, number and quality of relevant educational programmes to avoid flooding the market, while taking into consideration possibility of regional and international markets. Additional educational programs could focus on other disciplines such as ecotoxicology, human health risk assessment, and fisheries science ...etc.	LPA/Operators									
	Sector developers can develop scholarship and/or internship programme for students of sector specific educational programmes.	LPA/Operators									
Cultural Heritage	**Main Existing Control Measures**										
	Avoiding exiting known cultural heritage and archaeological sites and compliance with their protection regimes according to regulatory requirements (Antiquities System Decision 166/1933 and Cultural properties Law 37/2008)	Operators									
	PAR: Activities pursuant to a Reconnaissance license must not present a hazard or cause damage to Facilities, or towards pipelines, cables or other subsea structures used for other purposes than Petroleum Activities.	Operators									
	PAR: The Right Holder has to provide protection from: accidents and physical damage due to his activities; damage or risk of damage to workers; damage to fauna, flora, marine biodiversity and archaeology; marine pollution and pollution to springs that will be discovered during the course of petroleum activities; air pollution; damage to hydrocarbon bearing formations.	Operators									
	Proposed Mitigation Measures										
	Before conducting any sea floor disturbing activities, work sites shall be surveyed by marine archaeologists to identify any underwater archaeological sites and shipwrecks.	Operators									
	Specifications required for such surveys to be defined by DGA and LPA; Based on findings, buffer zones might be required around the identified sites.	LPA/DGA									
	A marine archaeologist shall be present on-vessel during Natural Resource Surveys (NRSs)	Operators									

Mitigation of Socio-Economic Impacts

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
	In case of discoveries the formal procedure for protection of archaeological sites must be followed, according to existing legislation, or as specified by DGA.	Operators									
Tourism	**Main Existing Control Measures**										
	Law 444/2002: it is strictly prohibited to discharge or sink or burn in Lebanese territorial waters materials that, directly or indirectly, will d) reduce the recreational value and tourism potential of the sea and the Lebanese coasts	Operators									
	National Oil Spill Contingency Plan	Operators/ Concerned authorities as per the NOSCP									
	PAR: Emergency Response Plan	Operators									
	Offshore blocks are located 3 NM away from the shore	-									
	Proposed Mitigation Measures										
	Drilling rigs/platforms should be positioned as far from the coastline as possible, however still practicable for the operator.	Operators									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and excercises e.g. disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Monitoring of chemical concentrations in edible fish and invertebrate tissue. A transparent seafood contaminant monitoring program would increase confidence in locally sourced seafood and enhance Lebanon's restaurant and tourist image.	Operators/MpPH									
	In order to increase positive impacts, the Ministry of Tourism and other responsible agencies can focus their tourism promotional campaigns on foreign workers origin countries.	MoT									
	Master Plans and Detail Urban Plans to be prepared in coastal areas where not available as a measure to sustainably plan potential petroleum induced growth.	CDR/DGUP									
Landscapes and visual amenity	**Main Existing Control Measures**										
	Compliance with SDATL (National Spatial Land Use Plan)	Operators									
	Flaring or venting shall be subject to a permit from MoEW	Operators									
	Offshore blocks are located 3 NM away from the shore line	-									
	Proposed Mitigation Measures										
	Drilling rigs/platforms should be positioned as far out from the coastline as possible, however still practicable for the operator.	Operators									
	When selecting a location, preference should be given to brown-field locations and areas with no/less landscape value.	Operators									
	Master Plans and Detail Urban Plans to be prepared in coastal areas where not available as a measure to sustainably plan potential petroleum induced growth.	CDR/DGUP									
	Main Existing Control Measures										
	The establishment of the sovereign wealth fund	GoL									
	Having a modern fiscal regime	GoL/MoF									
	OPRL, Article 67 on Local content requirements	Operators									

Mitigation of Socio-Economic Impacts

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
General Economy	PAR, Article 148: If the Right Holder in the course of Petroleum Activities causes a) limitation in or disturbance of activities and rights, fishing fields or occupied land; or b) limitations in aquaculture activities; or c) fishing or aquaculture equipment to be moved to less favourable locations as seen from a maritime resource management or commercial point of view; then the Right Holder shall compensate the physical or legal person affected by such demonstrable disturbance or damage. The same applies with regard to liability and claims if the vessel(s) or craft(s), equipment, catch or harvest of a physical or legal person is polluted, damaged or lost due to Petroleum Activities.	Operators									
	PAR, Article 157: The Right Holder shall ensure that the Operator gives preferential treatment to the procurement of Lebanese originating goods and services when such goods and services are internationally competitive with regard to quality, availability, price and performance. Lebanese originating goods and services are those that in substance or measured by value added are predominantly manufactured, constructed or performed in Lebanon, by Lebanese or by an entity owned and controlled by Lebanese.	Operators									
	EPA, Article 20 on Recruitment and Training stipulates that: as of the beginning of the Exploration Phase, not less than eighty per cent (80%) of the aggregate number of employees of the Right Holders (including the Operator) shall be Lebanese nationals.	Operators									
	PAR: Emergency Response Plan.	Operators									
	Proposed Mitigation Measures										
	Develop a robust revenue management mechanism; establishment of a Sovereign Wealth Fund as stipulated in the OPRL;	GoL									
	Develop a local content and local supply development strategy to operationalize the existing policies	LPA									
	Promote transparency and accountability to mitigate social and economic risks and particularly the risk of corruption in the sector which could negatively affect the economic growth and prevent the country to reach its optimal goals behind the oil and gas sector; the adoption of Transparency Law in the Offshore Oil and Gas sector (Law 84/2018) is an excellent step in this direction; it is important to ensure enforcement of this Law throughout all phases of the sector	GoL/MoEW									
	LPA should establish a communication strategy to manage expectations from the sector and promote stakeholder engagement and promote the beneficial impacts effectively and in a timely manner;	MoEW/ LPA									
	Increase operational capacities and capabilities to implement the NOSCP and monitor operator's compliance with ERP.	MoPWT/MoEW/LPA									
	Conduct trainings and excercises e.g. disaster response drills so that the entire team is prepared to work together when a spill occurs.	MoPWT/MoEW/LPA/ Operator									
	Main Existing Control Measures										
	PAR: Activities pursuant to a Reconnaissance license must not present a hazard or cause damage to Facilities, or towards pipelines, cables or other subsea structures used for other purposes than Petroleum Activities.	Operators									

Mitigation of Socio-Economic Impacts

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/ Closed)*
Infrastructure	EPA, Article 3 includes that LPA shall provide such assistance to the Right Holders as they may reasonably request in order to obtain information with respect to current and existing infrastructure and activities in the Block that are unrelated to Petroleum Activities (including telecommunication cables and areas reserved for naval activities of the State).	LPA									
	Existing international and national submerged infrastructure corridors with known buffer zones and standard operating procedures in case of accidental situations.	MoPWT/ MoEW/Operators									
	Proposed Mitigation Measures										
	Before conducting any sea floor disturbing activities, work sites shall be surveyed to identify any underwater submerged infrastructure.	Operators									
	Asses existing infrastructure services to specify its adequacy to cater increased demand and use. If new infrastructure services are to be established the planning process shall be conducted in collaboration with other sectors in the coastal region, such as tourism to optimize the use of the new infrastructure to achieve benefits to other sectors as well.	MoPWT/ MoE/MoEW/Operators									
	Locations of oil and gas onshore facilities and pipelines should duly consider RoW of the coastal railway to avoid possible adverse impacts.	MoEW/ LPA									
	Since oil and gas E&P will lead to higher use of road networks, thus more traffic, supply bases should be assigned in secondary areas that do not already suffer from major traffic problems like Beirut City.	MoPWT/ Operators									
Shipping	**Main Existing Control Measures**										
	PAR, Article 6: Vessels and crafts used for or involved in Petroleum Activities shall comply with applicable international and Lebanese laws and regulations regarding Petroleum Activities and navigation. The vessels and crafts shall abide by instructions given by the competent Lebanese authorities and by the competent Lebanese naval vessels, patrol boats or crafts.	Operators									
	PAR, Article 15: Operations conducted pursuant to a Reconnaissance licence must not unnecessarily or unreasonably impede or prevent the navigation of other vessels or crafts, fishing, aviation or other lawful activities.	Operators									
	EPA, Article 3 includes that LPA shall provide such assistance to the Right Holders as they may reasonably request in order to obtain information with respect to current and existing infrastructure and activities in the Block that are unrelated to Petroleum Activities (including telecommunication cables and areas reserved for naval activities of the State).	LPA									
	Existing shipping corridors with known buffer zones and standard operating procedures in case of accidental situations.	MoPWT/ Operators									
	Proposed Mitigation Measures										
	Uhlqvwdwh#wkh#YWPV	JrO									
	Require ships in Lebanese waters (except for military vessels) to install IVMS for proper monitoring to avoid any collisions and accidents	MoPWT									
	Coordination with the concerned governmental agencies to ensure offshore developments do not interfere with shipping routes	Operators/MoEW/ MoPWT/LPA									

Indicators to be Monitored and Monitoring Responsibility

Sustainability Factor	Indicator	Indicator type	Monitoring Responsibility	Applicable E&P Phase	Methodology	Budget	Possible sources of funding	Monitoring frequency	Institutional capacity needs	Priority	Status *(Not available/ In development/ Available)*
Ecosystem Protection (Air)	Indicator 1.1: Ambient concentrations of criteria air contaminants (CO, NOx, SO_2, NMVOC, PM) in coastal cities	State	MoE	R, E, P,D							
	Indicator 1.2: Emissions of CO, NOx, SO_2, NMVOC, PM from the offshore petroleum sector	Pressure	Operators	R, E, P,D							
	Indicator 1.3: Change in concentrations of criteria air contaminants (CO, NOx, SO_2, NMVOC, PM) in coastal cities due to offshore petroleum activities	Impact	Operators (Within their area of influence)	R, E, P,D							
Climate Change	Indicator 2.1: Change in emissions of GHGs from the petroleum sector	Impact	Operators	R, E, P,D							
	Indicator 2.2: Emissions of CO_2-e from the energy sector	Pressure	MoE	R, E, P,D							
	Indicator 2.3: Emissions of CO2-e during exploration activities	Pressure	Operators	E							
	Indicator 2.4: Emissions of CO2-e per production unit	Pressure	Operators	P							
Acoustic Environment	Indicator 3.1: Ambient noise levels measured in the vicinity of petroleum facilities/ support activities in the coastal area	State	Operators	R, E, P,D							
	Indicator 3.2: Increase in ambient noise levels measured in the vicinity of petroleum facilities/ support activities in the coastal area	Impact	Operators	R, E, P,D							
	Indicator 3.3: Number of Marine Mammals killed from underwater noise from the petroleum sector	Impact	MoE/CNRS/ Operators (Within their area of influence)	R, E, P,D							
	Indicator 3.4: Zone of influence on marine fauna	Pressure	Operators	R, E, P,D							
Ecosystem Protection (Marine Environment)	Indicator 4.1: Percent and deviation of discharges to the sea from offshore petroleum activities complying with national and international requirements	Pressure	Operators LPA	R, E, P,D							
	Indicator 4.2: Heavy metals in sediments along the Lebanese coast and from different depth ranges	State	MoE/CNRS/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.3: Increase in pollutants' concentrations in sediments attributed to petroleum activities	Impact	MoE/CNRS/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.4: Impacts related to sedimentation on the sea bed/turbidity (burial of species, clogging of the valves of the filter feeders, change of sediments particle size, etc.) due to offshore petroleum activities	Impact	Operators (within their area of influence)	R, E, P,D							
	Indicator 4.5: Seawater chemical characteristics along the Lebanese coast across the water column	State	MoE/CNRS/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.6: Change in chemical characteristics of seawater	Impact	MoE/CNRS/	R, E, P,D							

Indicators to be Monitored and Monitoring Responsibility

Sustainability Factor	Indicator	Indicator type	Monitoring Responsibility	Applicable E&P Phase	Methodology	Budget	Possible sources of funding	Monitoring frequency	Institutional capacity needs	Priority	Status *(Not available/ In development/ Available)*
	attributed to petroleum activities	Impact	Operators (within their area of influence)	R, E, P,D							
	Indicator 4.7: Number of spills reaching the coast	Impact	MoPWT	R, E, P,D							
	Indicator 4.8: Occurrence of submarine land slides and related impacts (Tsunamis, change of sediments particle size) due to petroleum activities	Impact	Operators	E, P,D							
	Indicator 4.9: Percent area of sensitive/ protected marine habitats affected by petroleum activities	Impact	MoE	R, E, P,D							
	Indicator 4.10: **Phyto and zoo benthos** (monitoring through underwater visual observations and sampling): - Species abundance. - Status of a selected indicator species. - Species richness and density. - Diversity indices.	State	MoE/CNRS/ MoA/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.11: Changes in abundance, status, richness and density of **Phyto and zoo benthos** attributed to offshore petroleum activities	Impact	MoE/CNRS/ MoA/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.12: **Nekton - free water fish**: - Identification and counting of species. - Diversity and dominance metrics. - Community characterization	State	MoE/CNRS/ MoA/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.13: Changes in diversity and dominance of **Nekton** attributed to offshore petroleum activities	Impact	MoE/CNRS/ MoA/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.14: **Sea mammals, sea turtles and seals (monitoring** through direct observation from boat): - Species abundance. - Status of indicator species (Selected from IUCN Red List) - Density of species	State	MoE/CNRS/ MoA/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.15: Changes in abundance, status and density of **cetaceans, sea turtles and seals** attributed to offshore petroleum activities	Impact	MoE/CNRS/ MoA/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.16: **Seabirds** (monitoring using direct observation): - Species abundance. - Status of indicator species (Selected from IUCN Red List) - Density of species	State	MoE/CNRS/ Operators (within their area of influence)	R, E, P,D							
	Indicator 4.17: Changes in abundance, Status and density of **Seabirds**	Impact	MoE/CNRS/	R, E, P,D							

Indicators to be Monitored and Monitoring Responsibility

Sustainability Factor	Indicator	Indicator type	Monitoring Responsibility	Applicable E&P Phase	Methodology	Budget	Possible sources of funding	Monitoring frequency	Institutional capacity needs	Priority	Status *(Not available/ In development/ Available)*
	benthos attributed to offshore petroleum activities	Impact	Operators (within their area of influence)	R, E, P,D							
	Indicator 4.18: Increase in the trend of introduction of invasive species due to petroleum activities	Impact	MoE/CNRS/ MoA/ Operators (in their area of influence)	R, E, P,D							
Ecosystem Protection (Coastal Environment)	Indicator 5.1: Percent area of sensitive coastal habitats affected by impacts related to the sector	Impact	MoE	R, E, P,D							
Transboundary Environmental Pressures	Indicator 6.1: Number of incidents of transboundary impacts from the offshore petroleum activities	Impact	MoPWT	R, E, P,D							
Environmental Governance	Indicator 7.1: Number, effectiveness and extent of capacity building projects for the environmental competent authorities	Impact	LPA	R, E, P,D							
	Indicator 7.2: Number of documented conflicts among institutions	Impact	(CoM)	R, E, P,D							
	Indicator 7.3: Number of documented environmental and social complaints related to the petroleum sector through established grievance mechanism	Impact	LPA	R, E, P,D							
Intermodal environmental parameters (Reducing Waste & Consumption Pressures)	Indicator 8.1: Quantity of hazardous wastes generated from offshore petroleum activities	Pressure	Operators	R, E, P,D							
	Indicator 8.2: Percentage of hazardous waste and chemicals generated by the offshore petroleum activities properly managed	Pressure	Operators/ MoE	R, E, P,D							
	Indicator 8.3: Percentage of radioactive/NORM waste generated by the offshore petroleum activities properly managed	Pressure	Operators/ LAEC	E, P,D							
	Indicator 8.4: Recycling rate, tons of material recycled from offshore petroleum activities	Pressure	Operators/ MoE	R, E, P,D							
Intermodal environmental parameters (Exposure to Natural Disasters)	Indicator 9.1: Direct economic loss attributed to disasters in relation to global gross domestic product (GDP) (Ref. SDGs, C110502)	Impact	MoET/DRR	R, E, P,D							
	Indicator 9.2: Number of accidents caused by failure in infrastructure related to the sector	Impact	Operators/LPA	R, E, P,D							
Social Conditions	Indicator 10.1: Proportion of population living below the national poverty line	State	MoSA	R, E, P,D							
	Indicator 10.2: Amount of funds received by the Lebanese Government from the sector	Impact	MOF/LPA	P							
	Indicator 10.3: Amount of funds generated by the sector spent on poverty reduction – especially through vocational trainings and education, social welfare programmes, improved living conditions, support programmes for small businesses, etc.	Impact	MoF/SWF	P							

Indicators to be Monitored and Monitoring Responsibility

Sustainability Factor	Indicator	Indicator type	Monitoring Responsibility	Applicable E&P Phase	Methodology	Budget	Possible sources of funding	Monitoring frequency	Institutional capacity needs	Priority	Status *(Not available/ In development/ Available)*
	Indicator 10.4: Increase in employment rate due to the offshore petroleum sector	Impact	MoSA/LPA/Operators	R, E, P,D							
	Indicator 10.5: Unemployment rate, by sex, age and persons with disabilities (Ref. SDGs, C080502)	State	MoSA	R, E, P,D							
	Indicator 10.6: Percent local labour working for oil and gas companies or service companies	Impact	MoL/LPA	R, E, P,D							
	Indicator 10.7: Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status (Ref. SDGs, C080801)from the sector	Impact	MoL	R, E, P,D							
	Indicator 10.8: Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status (Ref. SDGs, C080802)	State	MoL	R, E, P,D							
General economy											
	Indicator 11.1: Increase in GDP attributed to the offshore petroleum sector	Impact	MoF/Central Bank	P							
	Indicator 11.2: Non-oil based GDP	State	MoF	R, E, P,D							
	Indicator 11.3: Oil-based GDP	State	MoF	P							
	Indicator 11.4: Consumer Price Index (Inflation)	State	MoF	P							
	Indicator 11.5: Foreign Direct Investment	State	MoF	P							
	Indicator 11.6: Foreign Exchange Reserves	State	MoF	P							
	Indicator 11.7: Balance of trade	State	MoF	P							
	Indicator 11.8: Volume of HFO imported for power generation	State	MoEW/Customs	P							
	Indicator 11.9: Size of SWF	State	MoF	P							
Education	Indicator 12.1: Graduates with specific skills within the petroleum industry trained and employed	Impact	Operators/LPA	R, E, P,D							
	Indicator 12.2: Unemployment rate of graduates with sector-related degrees reduced	State	MoEHE	R, E, P,D							
Heritage	Indicator 13.1: Current amount of funds available for cultural heritage protection and promotion	State	MoF/MoC/ Operators	R, E, P,D							
	Indicator 13.2: % of cultural and archaeological heritage sites damaged by offshore petroleum activities and related onshore activities.	Impact	Operators/ MoC/LPA	R, E, P,D							
Health	Indicator 14.1: Increase in population with cardiovascular system diseases, respiratory system diseases, cancers and disabilities attributable to offshore petroleum sector	Impact	MoPH	R, E, P,D							
Crime	Indicator 15.1: Number of registered crimes linked to the sector	Impact	MoJ	R, E, P,D							
Landscapes and visual amenity	Indicator 16.1: % of nationally classified landscapes exposed to potential impacts	Impact	CDR/DGUP	R, E, P,D							
	Indicator 16.2: Deviation of petroleum facilities from the National Land Use Master Plan requirements	Pressure	LPA	R, E, P,D							
Fisheries	Indicator 17.1: Change in Fish and aquatic stock and change in chemicals concentrations in edible fish attributed to the offshore petroleum sector	Impact	MoA/CNRS/Operators	R, E, P,D							

Indicators to be Monitored and Monitoring Responsibility

Sustainability Factor	Indicator	Indicator type	Monitoring Responsibility	Applicable E&P Phase	Methodology	Budget	Possible sources of funding	Monitoring frequency	Institutional capacity needs	Priority	Status *(Not available/ In development/ Available)*
	Indicator 17.2: Total area of where fishing activities excluded due to petroleum activities	Impact	Operators/LPA	R, E, P,D							
	Indicator 17.3: Fish and aquatic stock (Ref: MoA) Assessment of biological parameters allowing stock assessments of selected pelagic and demersal fish species (Length-weight relationship, Age groups, Gonado-Somatic Index, Exploitation rate)	State	MoA/CNRS	R, E, P,D							
	Indicator 17.4: Cooperation in applied research and activate the partnership with the concerned institutions (Ref: MoA)	State	MoA/MoE/ CNRS	R, E, P,D							
Shipping	Indicator 18.1: Disturbance to shipping activities from the offshore petroleum sector	Impact	MoPWT	R, E, P,D							
Tourism	Indicator 19.1: Change in tourist arrivals	Impact	MoT	R, E, P,D							
	Indicator 19.2: Occupancy of coastal/beach resorts and hotels	State	MoT	R, E, P,D							
	Indicator 19.3: Recreational and touristic marine activities i.e. water sports, diving	State	MoT	R, E, P,D							
Energy	Indicator 20.1: Proportion of population with primary reliance on clean fuels (gas)(Ref. SDGs, C070102) sourced from E&P activities	State	MoEW	R, E, P,D							
	Indicator 20.2: Price of unit of energy from E&P activities	State	MoEW	R, E, P,D							
	Indicator 20.3: Change in cost to government to avail natural gas for power	Impact	MoEW	R, E, P,D							
	Indicator 20.4: Renewable energy share in the total final energy consumption (Ref. SDGs, C070201)	State	MoEW	R, E, P,D							
	Indicator 20.5: Proportion of natural gas in fuel mix used for power generation originating from E&P activities	State	MoEW	P							
	Indicator 20.6: Change towards achieving the required proportion of natural gas in energy mix originating from E&P activities	Impact	MoEW	P							
Infrastructure	Indicator 21.1: Increase in number and capacity of hazardous waste management facilities	Impact	MoE/CDR	R, E, P,D							
	Indicator 21.2: Impacts on sub-sea infrastructure due to offshore petroleum activities	Impact	Operators/ MoEW/ MoTI	R, E, P,D							
	Indicator 21.3: Change in capacity of transport infrastructure to cope with demand	Impact	MoPWT	R, E, P,D							
Industry	Indicator 22.1: Number of petrochemical and energy intensive industry establishments	Impact	MoI	R, E, P,D							
	Indicator 22.2: Cost of energy	Impact	MoEW	R, E, P,D							
	Indicator 22.3: Number of small-scale industries working in the Petroleum industry and the petroleum services industry	Impact	MoI	R, E, P,D							

[1] R: Reconnaissance activities **E:** Exploration P: Production D: Decommissioning

Capacity Building

Capacity Building Requirements

Mitigation Measures	**Responsibility**	**Prioity *(High/ Medium/ Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/ In progress / Closed)***
Training workshops focusing on improving the understanding of stakeholders about the oil and gas industry, its lifecycle and associated hazardsand understanding the requirements of this SEA as well as on core aspects of the offshore oil and gas industry (technologies and BAT, major accident prevention and related safety studies, emergency preparedness and response, chemical management…etc.)										
Training of concerned authorities on the implementation of Environmental Emergency Response e.g. National Oil Spill Contingency Plan and implementing practice drills to ensure effective operationalization. Response teams of operators and the government should include fisheries scientists and marine wildlife experts to ensure that the necessary data collection methods are used to document the effects of emergencies and to supervise wildlife rescue and early rehabilitation activities.										
Provision of necessary monitoring and inspection equipment to stakeholders depending on their needs and related training										
Capacity building and enabling of concerned national entities for oil spill response and management.										
Cross-training of offshore petroleum resources authorities and environmental resource managers so that they share a common vocabulary and vision.										
Training of concerned authorities on monitoring procedures and requirements as well as reporting requirements and the data needed for reporting on different indicators and monitoring results (more importantly for marine environment parameters, GHG and air pollutants)										

Providing training to concerned authorities who will be conducting missions on-board on safety requirements related to offshore O&G activities. With reference to the Maritime Labour Convention of 2006, personnel should have undergone full STCW'95 training to consist of all of the following elements; o Personal Survival Techniques (STCW A-VI / 1-1) o Fire Prevention and Fire Fighting (STCW A-VI / 1-2) o Elementary First Aid (STCW A-VI/ 1-3) o Personal Safety and Social Responsibilities (STCW A- VI/1 – 4) o Proficiency in Security Awareness (STCW VI/6, paragraph 1 and Section A-VI/6, paragraph 4) Study tours to offshore platforms and oil and gas facilities, so stakeholders (including marine resource managers and marine scientists)acquire practical know-how on how to conduct activities (such as inspections, sampling or audits) at such facilities										

Appendix E – Policy Recommendations

SEA Policy Recommendations

Sector Development Policies	Policy Recomendations	Responsibility	Prioity *(High/ Medium/ Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/Closed)*
Blocks Environmental Sensitivity	Based on the baseline review conducted under this SEA, nearshore blocks are the most environmentally sensitive blocks. This is because the continental slope is part of a considerable portion of the areas of these blocks. It is recommended that, if these blocks are to be licensed, in-depth, baseline surveys (including eco-toxicological studies) and stricter controls shall be adopted, as applicable.										
EIA for Plan for Development and Production	Based on the nature of stages of the field development, it is recommended that an EIA is submitted at the conceptual design and preliminary engineering stages then updated EIAs at the preliminary and detailed design and construction phases.										
Gas export	As a general policy, an LNG export option is to be avoided given its high impact on the carbon footprint of Lebanon jeopardizing meeting national commitments towards GHG emissions reduction and not being in line with the global need to mitigate the effects of climate change. Export through pipelines should be considered instead. If LNG option is a preferred option for technical or commercial reasons, emissions should be offset to ensure										

	compliance with Lebanon's international commitments.										
Processing Facilities	The SEA preferred option for multi-phase separation (ie separation of water, oil and gas from the extracted hydrocarbons) is to conduct such processing offshore in deep sea. It is recommended that these processes are not brought to shore or to the continental shelf to avoid significant impacts on the marine environment, fisheries and public health particularly given the likely generation of produced water from this process.										
Environmental Governance	**Policy Recomendations**	**Responsibility**	**Prioity *(High/ Medium/ Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/In progress/Closed)***
Despite of its importance, the required independence of the HSE regulator(s) must not become a pursuit of altruism since the only way to remove HSE risks from economic activity is to take land/sea bed out of economic use. The regulator is an enabler of high hazard industries on behalf of the state, and the economic activity is the primary purpose of allowing high hazard industries to operate. Nevertheless, identifying and mitigating the risk is indispensable at the short and long terms.											
On the short term:	The principal organizational adaptation will be the creation of functional separation between the HSE decision making and the economic decision making (resource management) at the Petroleum Administration. In such circumstances, every endeavor must be made from the Minister down to ensure at all times the independence and objectivity by preventing conflicts of interest between the HSE regulation on										

	one hand and the considerations of economic regulation and revenue collection on the other hand.										
On the long term:	The principal organizational adaptation will be the creation of structural separation that is the complete separation of the HSE regulator from the economic regulator. This is the recognized international best practice model. Such structural separation could take place through various scenarios while taking into consideration the following key issues: 1. The existing mandated roles & responsibilities of the key HSE regulatory authorities in Lebanon 2. The existing offshore oil & gas regulatory framework (i.e. OPRL, PAR, LPA Decree, EPA) 3. Fulfilling all, or to the maximum extent possible, the requirements of the international best practice principles 4. Ensuring that the occupational health & safety and Major Accident prevention (including Major Accident to the Environment) are regulated by a single entity 5. Achieving sufficient independence between HSE regulation and economic regulation 6. Government's constraints regarding mobilization of resources										

	Scenario 1: As a first scenario, an entity responsible for Occupational Health & Safety and Major Accident Prevention (including MATTE) will be established. Such entity could operate in parallel to LPA under the tutelage of the Minister of Energy and Water or under the tutelage of another ministry or be a fully independent regulatory authority. In this scenario, the follow up of all environmental matters sits with the Ministry of Environment (MOE). This will entail a close interface between the proposed health and safety regulator and the environmental regulator (MOE) namely on common topics (MATTE, management systems ...etc). Such a scenario would require active capacity building at the Ministry of Environment on the supervision of the new emerging sector. It may also require organizational arrangements at the Ministry of Environment to better follow up on the sector e.g. the provision of a specific unit.										
	Scenario 2: As a second Scenario 2, an entity is established as fully independent regulatory authority that regulates all HSE aspects including day-to-day environmental matters. If need be, such entity could communicate with other ministries e.g. Ministers of Labor and Environment.										
	In both scenarios, all economic regulations (resource management) remains at LPA under the tutelage of MOEW.										

Baseline Surveys and Database	**Policy Recomendations**	**Responsibility**	**Prioity *(High/ Medium /Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/In progress/Closed)***
Based on the baseline review and analysis and in light of the identified gaps given the lack of data on the Lebanese offshore, baseline surveys (environmental, social, economic)should be undertaken prior to any petroleum activity in order to develop an understanding of the environmental and socio-economic conditions, identify sensitivities, develop background levels, assess the environment's capacity for restoration and inform the impact assessment. The scope and scale of these baseline surveys will necessarily vary depending on the associated activity (reconnaissance or drilling or production). The approach and methodology of baseline surveys should be based on international best practices, such as, IOGP, OSPAR Guidelines for Monitoring the Environmental Impact of Offshore Oil and Gas Activities. All currently available data, as well as new emerging data and/or studies linked to any SEA relevant topic, should be continuously collected, verified and stored in one a database, in order to achieve the following: - Support responsible authorities in the monitoring process. - Support operators in development of high-quality EIAs, as well as other plans and baseline studies. - Support NGOs and other actors in peruse for transparency and accountability across the sector. - Enable other non-oil & gas sectors to use collected data for their own sustainable development.											

Waste Management Policies	Policy Recomendations	Responsibility	Prioity *(High/ Medium/ Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/In progress/Closed)*
Main policy recommendations related to the management of waste streams that could potentially be generated during the exploration, production and decommissioning phases include:											
Waste management hierarchy should be respected throughout the lifecycle of the upstream petroleum activities											
Priority should be given to waste prevention and minimization throughout the entire value chain, without entailing excessive costs. Implementation of the prevention principle should be equally directed toward reduced consumption patterns and better utilization of resources. Waste Management Plans should demonstrate that opportunities for prevention and minimization were used to the highest feasible extent											
Drilling fluids and cuttings should not be discharged to the sea; ship-to-shore for treatment or shipment outside Lebanon are acceptable options. Any other potential option shall be subject to a detailed environmental assessment.											
Operators are recommended to use water-based drilling fluids unless safety of the well could be jeopardized											
Produced water generated offshore should not be brought onshore for handling/treatment of disposal.Produced water should be preferably discharged into injection wells											
Only in the case that re-injection of produced water offshore is technically not feasible, discharge in the sea is allowed following strict conditions; it is recommended to follow OSPAR's risk based approach to the Management of Produced Water discharges from offshore installations in the marine environment											
In case discharge to the sea is the only option available, treated produced water cannot be discharged in the continental shelf or continental slope, or near any other sensitive ecosystem											

If NORM wastes are generated, the Lebanese Atomic Energy Commission (LAEC) should be immediately notified and these wastes should be managed according to the requirements of the LAEC; The Lebanese government should be prepared to have a state-of-the-art radioactive waste handling facility, adequately sited, and capable to store, treat and dispose of radioactive wastes generated by the petroleum sector											
Chemical Management	**Policy Recomendations**	**Responsibility**	**Prioity *(High/Medium/Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/In progress/Closed)***
Main policy recommendations related to the management of chemicals include:											
Relevant authorities to develop a chemical management framework which defines the import, handling, use, storage, transport and disposal of chemicals, particularly those relevant to the oil and gas sector											
Chemicals storage onshore should be centralized and limited to zones classified for such purposes (e.g. industrial zones)											
Eco-toxicity data shall be available for chemicals intended for use where preference should be given to chemicals registered in international databases such as European Chemical Agency (ECHA) or equivalent											
Chemicals Management Plans should be developed to be approved prior to the start of any activity involving the use of chemicals in line with EU regulations											
Continuous efforts should be targeted to substitute chemicals with hazardous characteristics with less hazardous alternatives											
International Maritime Dangerous Goods (IMDG) Code should be adopted for the transportation of dangerous goods or hazardous materials by vessels											
For the transport by road of chemicals considered dangerous goods, Lebanese Transport Operators are recommended to follow the rules of European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR and its protocol)											
Government to consider ratifying the hazardous noxious substances related Convention and Protocols											

Transparency and Fiscal Policy	**Policy Recomendations**	**Responsibility**	**Prioity *(High/Medium/Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/In progress/Closed)***
The E&P sector in Lebanon has already established strong safeguards to enable transparency and control corruption within the sector; this includes the recently adopted Transparency Law for the offshore oil and gas sector and the provision of a Sovereign Wealth Fund to manage revenues from the sector. However, it is still vital that the Government of Lebanon ensures the enforcement of both set-up mechanisms throughout all phases of the sector. Potential investment from Sovereign Wealth Fund reserves into productive sectors, infrastructure and social welfare could significantly contribute to enhance socio-economic conditions in Lebanon, as well as provide investments in "green industries", leading to further improvement of living conditions in Lebanon. Therefore, the design and operational management of the SWF should be carefully done, preferably in a highly participatory and transparent manner, not only to mitigate exposed social and economic risks, but also to ensure long-term and sustainable development of Lebanon.											

Management of expectations	**Policy Recomendations**	**Responsibility**	**Prioity *(High/Medium/Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/In progress/Closed)***

Development of any important economic sector, such as the petroleum sector, brings important impacts on the Lebanese society – both positive and negative. Therefore, it is important for the Government of Lebanon to understand the key drivers of change in social conditions in order to enhance positive impacts and mitigate negative ones. Since first signs of unrealistic expectations from the petroleum sector were already identified, substantial responsibility lies on the shoulders of responsible authorities to communicate realistic and evidence-based information to the Lebanese society. It is highly recommended that responsible authorities develop and enforce a comprehensive communication strategy, which will: - Raise the awareness on relevant topics; - Ensure active and constructive stakeholder engagement; - Promote beneficial impacts effectively; - Manage expectations from the sector; - Promote Corporate Social Responsibility (CSR) practices in the sector. If developed and appropriately implemented, it could also become an additional and important pillar of transparency and accountability in the sector.											
Implementation of the SEA	**Policy Recomendations**	**Responsibility**	**Prioity *(High/Medium/Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/In progress/Closed)***
Main recommendations for the effective and efficient implementation of this SEA include:											
Endorsement of the SEA recommendations and policies through integration into regulations and enactment by legal texts, as applicable.											
Maintain the SEA Task Force for the purpose of coordinating SEA implementation and environmental management of the sector (SEA Implementation Committee). Details of proposed requirements/modality for the SEA Implementation Committee are presented below.											

Proper enforcement of legal requirements and existing control measures. Appendix E of the SEA report includes a proposed template for the SEA implementation plan, this template shall be populated by the SEA Implementation Committee. Appendix F present a populated example for the purpose of explaining the format.											
Integration of the SEA framework indicators (state indicators) within the monitoring plans of key performance indicators monitored by authorities, as relevant.											
Operationalization of the systematic monitoring of indicators through envisioning of resources (qualified human resources, equipment, finances)											
Operationalization of the environmental database on environmental data associated with the offshore oil and gas sector.											
Establish a Scientific Committee, particularly on marine related issues, to act as an advisor to the LPA on technical matters.											
It is recommended that this SEA be updated in 5 years. The scope of the update shall be decided by MoE.											
Requirements for SEA Implementation Committee and possible modalities	**Policy Recomendations**	**Responsibility**	**Prioity *(High/Medium/Low)***	**Activities**	**Activity responsibility**	**Budget**	**Possible sources of funding**	**Start date**	**End date**	**Institutional capacity needs**	**Status *(Did not start/In progress/Closed)***
There are several options for future operational model of the Task force:											

APPENDIX F: POPULATED EXAMPLE OF THE SEA IMPLEMENTATION PLAN

DISCLAMER: **In this Excel sheet a theoretical example how to populate SEA Implementation plan is provided in order to further support is users. No data provided in this sheet should be considered as actual content of the SEA Implementation plan.**

Mitigation of Environmental Impacts during Exploration Phase

Component	Mitigation Measures	Responsibility	Prioity *(High/ Medium/Low)*	Activities	Activity responsibility	Budget	Possible sources of funding	Start date	End date	Institutional capacity needs	Status *(Did not start/ In progress /Closed)*
Air Quality and Climate Change	**Main Existing Control Measures**										
	Application of the Best Available Techniques (BAT) as stipulated by the Air Quality Protection law (78/2018) to minimize the impact on air quality.	Operators/MoE	HIGH	BAT adoption control and verification	MoE	?	Budget/Donors	According to actual needs	Continuously	Staff training on BAT	Did not start
	Compliance with Ambient Air Quality Standards (Decision No. 52/1/1996), Emission Limit Values for power generation (Decision No. 8/1/ 2001) and relevant international standards.	Operators/MoE	LOW	Monitoring	MoE	?	Budget	According to actual needs	Continuously	Staff training on off-shore monitoring	Did not start
	An emission permit is to be obtained from MoE as per law 78/2018 (in the absence of the permit, such permission is obtained via the EIA process)	Operators/MoE/GoL/ PoL	HIGH	1) Develop application decrees 2) GoL starts the addoption procedure for application decrees 3) Implementation of the verification procedure and procedure for issuing emission permits 4) Monitoring	1) MoE 2) GoL 3) MoE 4) MoE	?	Budget	1) November 2019 2) June 2020 3) September 2020 4) According to actual needs	1) May 2020 2) September 2020 3) Continuously 4) Continuously	Additional staff Staff training on procedures and off-shore monitoring	Did not start
	National Oil Spills Contingency Plan delineates a response system to mitigate the impacts of oil spills.	Operators/ Concerned authorities as per the NOSCP	HIGH	1) MoEW delivers a notification to the GoL to start the rartification procedure of the NOSCP 2) GoL starts the ratification process in thePoL 3) Implementation and monitoring	1) MoEW 2) GoL 3) All concerned authorities	?	Budget/Donors	1) November 2019 2) December 2019 3) July 2020	1) November 2019 2) February 2020 3) Continuously	Purchace of eqipment needed to implement NOSCP Additional staff Staff training Regular on-site exercises/practical drills	Did not start
	Emergency response planning is required according to PAR	Operators/LPA	LOW	ERP aproval	LPA	?	Budget	According to actual needs	According to actual needs	/	Did not start
	Flaring or venting and all types of Air Emissions release is subject to a permit from Ministry of Energy and Water and Emergency Flaring requires registration and reporting to the Minister within 24 hours from occurrence.	Operators/MoEW	MEDIUM	Issuing permits and monitoring	MoEW	?	Budget	According to actual needs	Continuously	Staff training on off-shore monitoring	Did not start
	The Ministry of Environment's Decision Number 99-1/2013 regarding the submission of information on Green House Gas emissions for all facilities.	Operators	MEDIUM	Monitoring	MoE	?	Budget	According to actual needs	Continuously	Staff training on off-shore monitoring	Did not start
	Proposed Mitigation Measures										
	Ensure enforcement of BAT as required by Law 78/2018 (Air Quality Protection Law) and Decree No. 10289/2012 (PAR); this requires proper training of MoE and LPA personnel on BAT applicable to the offshore oil and gas industry and the review of BAT demonstration in EIA studies; MoE needs to ensure that BAT is integrated in design of facilities, implemented and properly maintained during operation	Operators/MoE/LPA	HIGH	1) Organize and implement trainings on BAT applicable to the offshore oil and gas industry 2) Review of BAT demonstration in EIA studies 3) Ensure BAT is integrated in design of facilities, implemented and properly maintained during operation 4) Monitoring	1) MoE/LPA 2) MoE/LPA 3) MoE/LPA 4) MoE	?	Budget/Donors	1) November 2019 2) According to actual needs 3) According to actual needs 4) According to actual needs	1) Continuously 2) Continuously 3) Continuously 4) Continuously	Additional staff? Staff training on BAT	Did not start
	Use of Green diesel instead of Marine Gasoil where technically feasible; green diesel has a significantly lower sulfur content	Operators	LOW	Monitoring	MoE	?	Budget	According to actual needs	Continuously	Staff training on off-shore monitoring	Did not start
	Fuel efficiency measures shall be taken in the selection process for platform, support vessels and helicopters, where possible.	Operators	LOW	Monitoring	MoE	?	Budget	According to actual needs	Continuously	Staff training on off-shore monitoring	Did not start
	Ratification of MARPOL Annex 6 to decrease emissions from vessels.	GoL/MoE/PoL	HIGH	1) MoE delivers a notification to the GoL to start the rartification procedure of MARPOL Annex 6 2) GoL starts the ratification process in the Parliament of Lebanon 3) Monitoring	1) MoE 2) GoL 3) MoE	?	Budget	1) November 2019 2) December 2019 3) According to actual needs	1) November 2019 2) February 2020 3) Continuously	Additional staff? Staff training on off-shore monitoring	Did not start
	Regular check for leaks with latest technology and take prompt action	Operators/MoE/LPA	LOW	Monitoring	MoE/LPA	?	Budget	According to actual needs	Continuously	Staff training on off-shore monitoring	Did not start
	Explore possibilities for the implementation of Decree No. 167/2017 that provides incentives for environmental investments and assess its applicability to the offshore E&P sector	Operators/LPA/MoE	MEDIUM	Exploring possibilities	MoE/LPA	?	Budget	November 2019	December 2019	Expert support ?	Did not start