

**Advice on the Terms of Reference  
for the Strategic Environmental  
Assessment of Oil and Gas  
Development and Coastal  
Management - Mauritania**

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## List of acronyms

CMDT	Cadre de dépenses à moyen terme
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Initiative
EMP	Environmental Management Plan
FIBA	La Fondation Internationale du Banc d'Arguin
FPSO	Floating, Production, Storage and Offloading Vessel
GHG	Greenhouse gas
GoM	Government of Mauritania
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IFC	International Finance Cooperation (member of the World Bank group)
IMF	International Monetary Fund
IMO	International Maritime Organization
IMROP	Institut Mauritanien de Recherches Océanographiques et des Pêches
IUCN	The World Conservation Union
LNG	Liquefied Natural Gas
MEAD/MAED	Ministry of Economic Affaires and Development
MDE/MDRE	Ministry of Rural Development and Environment
MEP	Ministry of Energy and Petroleum
MMI	Ministry of Mines and Industry
MFME/MPEM	Ministry of Fishery and Maritime Economy
MoF	Ministry of Finance
NCEA	Netherlands Commission for Environmental Assessment
OSCP	Oil Spill Contingency Planning
PANE	Plan d'Action Nationale pour l'Environnement et le Développement Durable
PDALM	Plan Directeur d'Aménagement du Littoral Mauritanien
PFW	Production Formation Water
PNBA	Parc National du Banc d'Arguin
PRCM	Programme Régional de Conservation de la Zone Côtière et Marine en Afrique de l'Ouest
PRSP/ CSLP	Poverty Reduction Strategy Programme
PSC	Product Sharing Contract
PSSA	Particularly Sensitive Sea Areas
SEA	Strategic Environment Assessment
SIA	Social Impact Assessment
SIMP	Social Impact Management Plan
WB	World Bank
CMDT	Cadre de dépenses à moyen terme
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Initiative
EMP	Environmental Management Plan
FIBA	La Fondation Internationale du Banc d'Arguin
FPSO	Floating, Production, Storage and Offloading Vessel
GHG	Greenhouse gas
GoM	Government of Mauritania



# 1. INTRODUCTION

## 1.1 SEA Oil and Gas, Mauritania

In 2001 the first offshore oil field was discovered by Woodside Mauritania Pty Ltd (Woodside). Early 2003 Woodside started an environmental impact assessment (EIA) process by publishing draft terms of reference. In January 2005 the final EIA was published followed later on by a Social Impact Assessment (SIA), an Environmental Management Plan (EMP), and, as part of the SIA, a Social Impact Management Plan (SIMP).

In the years following the first discovery (in Block 4) by Woodside, other concessions were granted for a number of offshore blocks by the Mauritanian government. Recently, terms of reference for an EIA were published for the exploration of the Aigrette-1 field (Block 7) and the Flamant-1 field (Block 8) by Dana Petroleum E&P Limited and an EIA was prepared for the proposed drilling program at Heron -1 (Block 20; an onshore concession). (See map in Annex). Woodside and its Joint Venture Participants started to exploit the offshore Chinguetti field in February 2006.

Both the offshore concessions and the Production Sharing Contract (PSC) between Woodside and the Government of Mauritania (GoM) were granted i.e. agreed upon without the availability of a formal strategic framework/plan for decision making. Decisions were made on a case by case basis. Such a strategic plan should provide the Mauritanian Government the necessary tool to direct future oil and gas development in a sustainable way.

The economy of Mauritania will go through a period of major transformation due to developments in the oil and gas sector. This may affect or cause trade-offs with the fishery (at present the main economic activity), the existing ecological values in the marine and coastal area and socio-economic developments. In the view of the NCEA strategic decisions have to be made on:

- the pace of management of Mauritanian resources, aimed at building up an adequate institutional structure, at the strategic allocation of additional revenues between investments and poverty alleviation and at optimal exploitation of the resources themselves,
- the ambition level for technical requirements given their interaction with the use of renewable resources (fishery, landscape, biodiversity, and culture).

A strategic environmental assessment (SEA) can provide valuable support in the preparation of these strategic decisions. An SEA provides the GoM with information on the best options on **where, when and how** developments can be realized in a sustainable way, taking into account cumulative environmental, social and economic impacts. In addition, it also structures the government and public debate and feeds this debate through a robust assessment of environmental, social and economic consequences. It ensures the necessary involvement of relevant stakeholders in the process of decision making on a strategic plan and thus contributes to 'good governance'. The SEA will also facilitate future EIAs. The questions on where, when and how will already have been dealt with at the strategic level.

The lack of a strategic plan and underlying strategic environmental assessment (SEA) has been a major point of criticism with respect to the decisions taken by the Mauritanian government since 2001. The large number of pro-

jects started up and as anticipated, the possible risks of polluting high-value nature conservation areas (i.e. Banc d'Arguin and National Park Diawling) and fishery grounds and the recent social unrest linked with oil/gas development in other developing countries, underline the urgency to develop an integrated strategy/assessment.

The urgent wish of the GoM to establish 'good governance' gives momentum to start the SEA process, the necessity of which is broadly felt.

## 1.2 Strategic plan

So far decisions on granting concessions and on Production Sharing Contracts are taken on a case by case basis. There is no formal strategic plan on future oil and gas developments yet decided upon in support of which an SEA is to be carried out.

The first action to be undertaken by the GoM therefore is to decide that the results of the SEA process are embedded in a formal national strategic plan on oil/gas development in offshore and in the coastal zone.

Status and scope of the strategic plan are to be decided upon. According to the NCEA the strategic plan should formulate:

- preferred pace and timing of development (when)
- preferred locations (where),
- set of conditions (how)
- allocation of revenues
- enforcement and capacity building

In the strategic plan a direct link should be made between the pace of the oil and gas development and the allocation of revenues as pacing – among other things- will give the GoM time to build up a sound and transparent framework to manage natural resource revenues.

Taking the precautionary principle as starting point the GoM has to decide in which zones development is explicitly excluded and in which zones conditional developments are allowed.

Conditions for development will depend on the ambition of the GoM to exclude or minimize risks.

As was concluded already in the EIA/SIA prepared for the Chinguetti project, and in comments on these reports, sustainable development (technical, social and economic) depends to a large extent on the capacity of the GoM to enforce, monitor and evaluate its decisions. Therefore the strategic plan should address how to enforce and monitor governmental decisions and how to realise the necessary capacity.

As the strategic plan will cover policies concerning oil/gas development, coastal development and the environment, and they should be consistently linked with the policies on economic and social development, the NCEA advises the strategic plan to be the direct responsibility of the Prime Minister.

The Ministry for Energy and Petrol (MEP) could take the lead in preparing such a decision in close collaboration with the Ministry of Fishery and Maritime Economics (MPEM), the Ministry for Rural development and the Environment (MDRE) and the Ministry of Economic Affairs (MAED).

### 1.3 SEA legal requirements

Under Mauritanian legislation<sup>1</sup> no explicit obligation exists to perform an SEA for strategic governmental plans and programs. Only major projects are subject to an obligatory EIA. Therefore an explicit government decision to perform this SEA needs to be made.

From its field visit in April 2006 (see Appendix 1) the NCEA concluded that there is a widespread support to start up an SEA process. This support was confirmed during her second visit in July 2006. Clearly the GoM needs to formally enforce this desire in a governmental decision to carry out an SEA and implement its findings in a comprehensive strategic plan.

In the absence of a legal obligation to perform an SEA, no specific institutional structures exist and no procedures have been laid down in legislation. In June 2006 the President decided to create an Environmental Commission to control, among other things, the oil/gas development. Very recently the *Sécretariat d'Etat* in charge of the Environmental Commission was appointed. The NCEA would like to underpin the importance of these recent developments as they can provide the SEA with the necessary institutional support and ownership.

The quality and transparency of decision-making will be significantly enhanced by making the Environmental Commission responsible for the coordination of the SEA process.

### 1.4 Contribution of the NCEA

On behalf of the President of the Islamic Republic of Mauritania, the Embassy of the Netherlands approached the Netherlands Commission for Environmental Assessment<sup>2</sup> to provide its expertise and services to advice on the Terms of Reference for an SEA<sup>3</sup>.

The NCEA emphasizes that it has no opinion on the desired content of the strategic plan for oil/gas development in Mauritania. The NCEA never judges the acceptability of projects or plans. Decisions on the acceptability of a plan or project are the responsibility of the authorities involved. The NCEA aims to contribute to guarantee that essential environmental and socio-economic information is available to all stakeholders for sound and well balanced decision-making on the strategic plan by the GoM. In addition the NCEA focuses on safeguarding transparency and stakeholder participation in the planning process.

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<sup>1</sup> Loi No 2000-045/ portant loi cadre de l'environnement, Présidence de la République Islamique de Mauritanie, 27 Juillet 2000

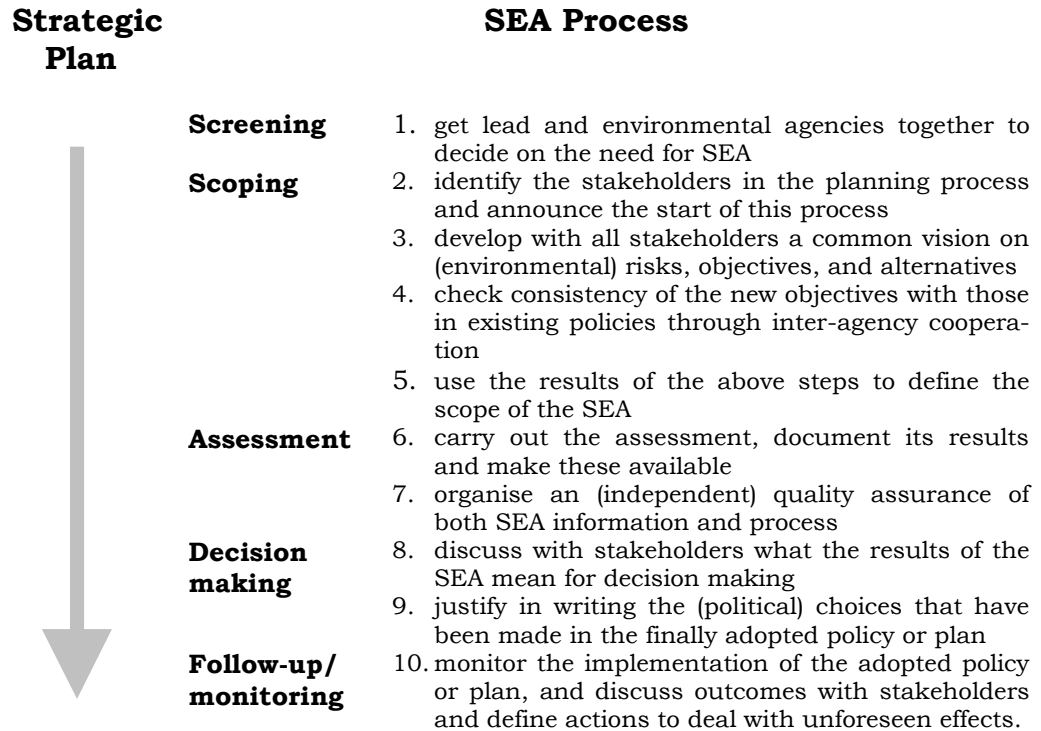
Décret No 2004-094 relatif à l'Etude d'Impact Environnemental, Premier Ministre de la République Islamique de Mauritanie, 4 novembre 2004

<sup>2</sup> Henceforth referred to as NCEA

<sup>3</sup> See appendix 1: Assignment for the advice by the NCEA



As the SEA is to support the development of the national strategic plan it has to be well incorporated into the planning process for the strategic plan. An integrated approach is needed, meaning that frequent communication is required between the plan developers and the team that works on the SEA. The NCEA generally considers the integration of the following planning procedures as “good practice SEA”.<sup>4</sup>



Reference to these steps is given in the different chapters of this advice.

## 1.5 Approach taken by the NCEA

One of the aims of the field visit by the NCEA to Mauritania from 26–28 April 2006 was to assess the existing basis of support and commitment for applying an SEA procedure<sup>5</sup>. Insight in policy priorities was gained.

All consulted Ministers underlined the necessity to balance the interests of fishery and nature conservation with economic interests. The current inadequacy of legislation and institutional capacity to balance these interests was stated by all interlocutors. The need to set a national framework for future oil/gas development supported by an SEA and capacity development was broadly felt.

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<sup>4</sup> See appendix 2: SEA Key sheet

<sup>5</sup> See appendix 1: Assignment for the advice by the NCEA

In order to prepare Terms of Reference (ToR) for an SEA, the NCEA formed a working group of experts, representing the NCEA and comprising the following disciplines:

- oil and gas development;
- hydrodynamics;
- ecology;
- social impacts and fishery;
- macro-economics.

The working group members are listed in appendix 3. The working group visited Mauritania from 3 – 7 July, 2006<sup>6</sup>. Next to reviewing existing assessments on the Chinguetti project prepared by Woodside, the visit was to gain insight into:

- short and long term policy dilemma's;
- the planning and institutional structure of GoM in order to establish that the SEA could successfully contribute to decision making;
- the availability of base line data;
- the availability of expertise.

Back ground information was gathered including views of important stakeholders<sup>7</sup>.

## 1.6 Outline of this advisory report

The advisory report is structured following the steps in SEA.

- Screening:
  - Chapter 1: Need for SEA
- Scope:
  - Chapter 2: SEA Process: preparation/start and integration into planning, consultation and formulation of recommendations,
  - Chapter 3: Establishment of a shared vision problem analysis, objectives and alternatives
  - Chapter 4: Consistency analysis between oil and gas sector strategies and existing policies and strategies
- Assessment en quality assurance:
  - Chapter 5: content of the technical assessment; independent quality assurance
- Decision-making:
  - Chapter 6: Political decision making and accountability mechanisms.
- Follow-up:
  - Chapter 7 Recommendations for monitoring and enforcement during the implementation of the strategic plan.

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<sup>6</sup> See Appendix 4: Programme of the Site Visit

<sup>7</sup> See Appendix 5: Documentation

## **2. SEA PROCESS**

### **2.1 Institutional structure : SEA and Environmental Commission (Secrétariat d'Etat)**

According to the NCEA the Environmental Commission would be the obvious institution to decide on the SEA process to be followed, the required contents of the SEA and to assure that the SEA results are implemented into decisions by the GoM.

The leading current economic activities are hydrocarbon development and fisheries. To increase the chance of success of the SEA process, representatives of the respective ministries, the environment ministry included, should work closely together in the development of this Strategic Environmental Assessment. It is also important to involve MAED to assure the incorporation of socio-economic issues.

Appendix 6 gives a scheme for the possible institutional structure which is elaborated upon in the following paragraphs.

### **2.2 SEA facilitator**

For the SEA process, a highly professional facilitator, preferably Mauritanian, will be needed to support the Environmental Commission. The NCEA suggests that the Mauritanian facilitator should be backed up by a French speaking foreign facilitator, experienced in SEA.

### **2.3 Consultation**

SEA is a tool to attune strategic assessment in different sectors. In essence SEA is a planning instrument that allows stakeholders to coordinate their plans. This implies that consultation should generate understanding and if possible mutual benefits. At central level, responsible ministries should develop a common strategic perspective that overarches sector interests. Such a strategic perspective gives sector ministries, local communities, the private sector and the civil society a sound benchmark to develop their strategic view within their own mandate. Careful consideration of these mutual benefits avoids disappointment and disinterest and catalyzes innovation.

Various guidelines for carrying out an SEA emphasize communication and consultation as an essential part of the SEA process. Stakeholder involvement is essential to ensure that concerns of different stakeholders are properly identified and addressed. International experience shows that in practice mainly organized groups of stakeholders participate. Active participation of individuals is rare due to the strategic character of an SEA.

Formal requirements for consultation in an SEA process are absent in Mauritania. Requirements laid down in Mauritanian legislation for an EIA require consultation to be twofold, first on the scope of an EIA and second on the content of an EIA report.

### **2.3.1 Stakeholder Forum for SEA**

International experience has shown that stakeholders should be involved in a continuous interactive process, as full participants of the SEA enterprise. Participation of the main stakeholders in a broad Stakeholder Forum for the SEA will guarantee this.

In order to prepare the decisions on SEA to be made by the Environmental Commission the installation of a broad Stakeholder Forum is advised in which respective Ministries, NGO's and relevant research institutions participate. In the view of the NCEA this forum could consist of:

- Key decision makers for environmental issues within the relevant ministries MEP, MPEM, MDRE and MAED;
- Research institutions such as IMROP;
- Representatives from IUCN and PRCM
- Representatives from Banc d'Arguin and National Park Diawling;
- Representatives from the fishery communities (artisan and commercial).

The Stakeholder Forum is to be supported by a well equipped secretariat reporting to the facilitator of the overall SEA process.

To keep the process manageable the NCEA suggests the number of representatives to be limited to approx. 15.

### **2.3.2 Other Stakeholders**

Furthermore, it is essential that all potentially affected groups have the opportunity to participate, including groups that do not usually participate because of cultural, language, economic or other barriers.

The NCEA advises to consult these groups twice in order to:

- develop a shared vision on risks, objectives and alternatives (step 3);
- discuss alternatives and their impacts and the preferred alternative (step 8).

To ensure meaningful participation, participants should be provided with information and become involved with participatory methods adapted to their language, culture, level of education, knowledge and interests. Experiences with the consultation processes during the preparation of the EIA/SIA for the Chinguetti project show that this is to be an important issue for the upcoming SEA<sup>8</sup>.

Themes and issues should be presented from the perspective of the knowledge, attitude and subsequent actions of a large number of stakeholder groups. For example, new employment opportunities give rise to expectation, intentions to migrate, and to actual job seeking. Likewise an oil exploitation project leads to different perceptions about risks, pollution, influence on the fish population and possibly reduced productivity of the fishery sector.

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<sup>8</sup> (Draft) Advisory Review of the Environmental Impact Statement and the Social Impact Study for the Chinguetti Offshore Oil Development Project, 5 September 2006, Netherlands Commission for Environmental Impact Assessment.

For successful consultation:

- themes/issues, alternatives and impacts need to be tangibly formulated so that stakeholders can meaningfully participate in the dialogue,
- different stakeholder groups, in particular the vulnerable groups, need sufficient support to be able to articulate their views.

## 2.4 Collaboration

As transparency and revenue management are major issues for the SEA the Environmental Commission needs to seek collaboration with:

- The Extractive Industries Transparency Initiative (EITI) Committee
- The Committee on legislation for revenue management

The government has set up an EITI committee to follow up on its commitment to adopt the EITI guidelines. This committee draws on suggestions from and consultations with international agencies, such as the World Bank (WB) and the International Monetary Fund (IMF). The government has also set up a committee to follow up on its commitment to prepare for a law on the revenue management from all extractive industries. For either committee a calendar has been prepared for the steps to be taken. The work of both committees is to be completed in December 2006.

## 2.5 Budget

The NCEA has not been given clear information on how the proposed SEA is to be funded. However, in her contacts with possible donors such as the WB, the willingness to financially contribute is clearly present. Also, thoughts should be given to what constitutes a reasonable contribution from the oil companies in light of their benefits from a well documented SEA and resulting improved framework for their activities. NCEA recommends securing funds before starting the SEA process

The need for specialist studies and expert advice in this SEA cannot be predicted in detail. The NCEA observes that local expertise in Mauritania to prepare the SEA is scarce. The lack of technological expertise on for instance oil and gas development, detailed oil spill modelling and long term impacts of oil spills on ecology is obvious. IMROP can provide part of the necessary expertise on potential impacts. IUCN, PNBA and PCMR possess an enormous expertise and knowledge on various issues to be dealt with in the SEA. The EIA and SIA prepared for the Chinguetti project already contain valuable base-line information.

Although expertise and experience is partly available within Mauritanian institutions, a significant input of foreign experts will be needed. The magnitude of the necessary budget for this SEA will be several 100.000 USD.

This budget would cover facilitator and consultancy fees, the preparation of the SEA and execution of the consultation process.

## 2.6 Time line and dissemination of information

### 2.6.1 Time line

The large number of oil and gas development projects started up and as anticipated, in combination with the absence of a strategic plan to set a framework for these developments, creates a sense of urgency to develop a strategic plan for oil/gas development supported by an SEA. This sense of urgency was confirmed by the stakeholders during the visits of the NCEA.

It is up to the GoM to decide on the deadline for the decision on the national strategy. Given the sense of urgency however it seems to the NCEA that immediate action is required to prepare the strategic plan and the SEA. To give an idea on steps to be taken, a tentative time schedule for the SEA/planning process is given in the scheme below resulting in a time line of 18 months from the start of the process up to the final approval of the strategic plan.

		Month
<b>Screening</b>	1. get lead and environmental agencies together to decide on the need for SEA	1
<b>Scoping</b>	2. identify the stakeholders in the planning process and announce the start of this process	1
	3. develop with all stakeholders a common vision on (environmental) risks, objectives, and alternatives	2/3
	4. check consistency of the new objectives with those in existing policies through inter-agency cooperation	2/3
	5. use the results of the above steps to define the scope of the SEA	4/5
	<b>Assessment</b>	6. carry out the assessment, document its results and make these available
	7. organise an (independent) quality assurance of both SEA information and process	15
<b>Decision making</b>	8. discuss with stakeholders what the results of the SEA mean for decision making	16/17
	9. justify in writing the (political) choices that have been made in the finally adopted policy or plan	18
<b>Follow-up/ Monitoring</b>	10. monitor the implementation of the adopted policy or plan, and discuss outcomes with stakeholders and define actions to deal with unforeseen effects.	> 18

The first 4 steps in the SEA process, including:

- consultation with stakeholders on objectives and scope of the strategic plan and the SEA
- and a consistency analysis with existing strategies and policies for the oil/gas developments by interagency consultation

in practice prove to be very important steps that already improve decision making. A relatively short-term planning is appropriate. The parties involved should be able to articulate their interests early in the process and become committed to the remainder of the SEA process.

The conclusions of a first round like that should be reported and published. This way, a pre-SEA is worked out that – within reason- can and probably will have direct influence on decision making.

A continuous interactive process between SEA process and plan process is required with involvement of the Stakeholder Forum in all steps. It could be useful to include in step 6 (month 6/14, 'carry out the assessment') a discussion on a 1<sup>st</sup> draft of the assessment with the key stakeholders in the Stake-

holder Forum. Such a discussion can lead to valuable additional alternatives (to be developed) and the impact description.

### **2.6.2 Dissemination of information**

In line with the planning of the SEA process a planning for the dissemination of information is to be developed to ensure that all participants in the discussion receive the relevant information in due time.

### **2.6.3 Quality assurance**

Quality assurance should not only take place when the SEA is finished (see also 5.9). As the SEA process is just as important as the contents, the quality assurance can be organised at regular intervals during the undertaking of the SEA process, especially as this is a learning process for all parties involved. Frequent discussions within the Stakeholder Forum during the SEA on process and content of the SEA, contribute to the quality assurance.

## **3. SHARED VISION ON PROBLEM ANALYSIS, OBJECTIVE SETTING AND ALTERNATIVES**

Good practice SEA starts with a broad inventory of organizations and sectors that should be involved in the dialogue on how to achieve such a strategy. This should include a stakeholder analysis taking into account the level of knowledge, degree of interest, importance and influence and the extent to which a stakeholder group might be affected<sup>9</sup>.

Shared visions should be worked out in the SEA on the development of the oil industry to be addressed. Should the SEA be directed exclusively to offshore oil and gas development or should it also include the onshore oil and gas development? In order to keep the SEA manageable the NCEA advises to primarily direct the SEA to offshore development and developments situated in the coastal area. At this moment the only anticipated inland development in rural areas is the exploration of gas in Taourdine Basin. Any commercial discovery is likely to be exported by pipeline to Algeria and thus, in the coastal area, there will be negligible impacts on the environment. The SEA therefore could be restricted by generally addressing the consequences and impacts of possible oil/gas developments inland (in rural areas) on the coastal area in a qualitative way.

In view of the direct link with offshore development coastal developments such as fishery, port activities, coastal defence, population migration trends and tourism are to be addressed in the SEA. To that end a clear decision on the extent of the coastal zone is needed.

The time frame of alternatives and impacts to be developed in the SEA is to be decided upon. To adequately cover possible long term policy options and impacts the NCEA advises to consider in the SEA alternative policies for the period up until 2030.

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<sup>9</sup> The stakeholder inventory in the SIA for the Chinguetti project can serve as a starting point for such a stakeholder analysis.

The NCEA advises to develop alternatives in the SEA, by logically integrating the following elements into coherent alternative policies:

1. pacing and timing of the development of available natural resources in order to adequately manage revenues, in order to achieve a sound macro-economic and social environment, and to obtain maximum benefit from the available oil and gas reserves;
2. regulation of the technology of oil and gas exploitation indicating the level of ambition with respect to environmental standards.
3. choice of appropriate locations for exploitation in order to minimize potential risks to marine/coastal values and vulnerabilities;
4. routing of national and international maritime traffic in order to minimize risks of oil spills.

The development of integrated alternatives can be steered by a leading vision, such as emphasis on optimizing ecological sustainability, optimal conditions for fishery or emphasis on following international demand for oil and gas.

### 3.1 Pace and timing of developments

Despite its current limited capacity the GoM has to deal with a rapidly increasing number of initiatives of private companies. Therefore the GoM urgently needs to decide on the desired pace of development allowing them to manage and control developments.

The benefits of pacing and timing developments can be:

- to allow the GoM to build an adequate capacity to manage the petroleum sector appropriately including a sound and transparent framework to manage natural resource revenues;
- the possibility to achieve a stable macroeconomic environment (inflation, interest, fiscal policy) thus avoiding the Dutch Disease effect<sup>10</sup>;
- to balance development of the non-oil sectors and to sustain poverty alleviation thus :
  - balancing competitiveness between sectors (qualified staff, prices);
  - controlling migration patterns;
  - avoiding social and political tension.

The SEA can address different scenarios for a slow, medium or high pace exploitation, *e.g.* over 10, 20 or 30 years, in combination with different programs for revenue management. To this end, close collaboration is needed with the WB. The WB has recently published a report – dated June 2006 - on revenue management in Mauritania in which it draws on good and bad examples from various countries. It includes a prognosis for medium and high oil revenues over the total period for which such revenues are expected. The prognosis however, does not yet include a variant in which the exploitation is drawn out over a longer time period than the time technically or economically feasible.

If the technical or economic limits of extended exploitation have been reached, the SEA could also include alternatives in pacing concession rounds and awarding production licenses. This could also lead to the same effect of

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<sup>10</sup> The Dutch Disease effect implies that a strong and booming export oriented sector has a potential negative effect on the competitiveness of other sectors.



prolonged oil and gas recovery and revenue generation, at the pace the Mauritanian economy can absorb, without straining the optimal technical and economic lifespan of the oil or gas field.

In discussing the possibilities for pacing developments the SEA should address the *probability* of:

- possible development of LNG production in the future and linked on-shore activities;
- future refinery activities;
- port developments which may be necessary to accommodate such activities, including the effects of such a development for coastal management

If the quantities of oil and gas discoveries are such that a business case can be made for a local oil refinery which could service both the local market and export markets, the logical location choice for that refinery would be along the coast near existing infrastructure, population centres, local markets and export facilities. Nouakchott would therefore rank high as such a location. The same holds for an LNG plant. The socio-economic and environmental impacts of such developments will depend on the scale of such industries. The SEA can discuss the probability of these developments and their possible impacts.

### 3.2 Exploitation technology

In order to be able to decide on the level of ambition set for future developments in the strategic plan, the SEA should discuss the consequences of choosing for a certain ambition level in technical ways of exploitation. The EIA/EMP of the Chinguetti project and the reviews by Scandpower, Goodland, Kloff, Wicks and the NCEA provide important elements that should be used to discuss this level of ambition to be set by the GoM.

The scope of environmental impacts to discuss in the SEA will depend on the ambition level set by the GoM. Taking into account possible risks of impacts on internationally valued areas as Banc d'Arguin and National Park Diawling, the possible impacts on fishery and accumulation of impacts, the NCEA recommends taking 'best techniques available' as a starting point in the SEA. If a deviation from 'best techniques' is called for, the SEA should give the arguments for this deviation and should discuss under which conditions the deviation can be considered.

Therefore the SEA should discuss the environmental pros and cons of the various technological alternatives that are available to gather seismic data, to drill and test wells, to develop a newly discovered gas or oil field, etc. On this basis, the most suitable alternatives can be chosen for each set of environmental conditions (*e.g.* open sea, near shore, near protected areas, coastal areas).

Emphasis is to be given on impacts caused by:

1. seismic activities,
2. drilling and drilling discharges,
3. testing/flaring,
4. development activities (flow lines, sub sea completions, FPSO or production platforms),
5. oil spills,
6. discharge of Production Formation Water.

Appendix 7 gives an elaboration of the technical features to be addressed.

### 3.3 Location of exploitation

The risks of oil spills damaging natural values (fish and ecology) is one of the major issues to address in the SEA.

Taking the precautionary principle as starting point, the GoM has to decide in which zones development is explicitly excluded and in which zones conditional developments are allowed.

Identification by inverse modelling of oil spills will help to identify:

- Particularly Sensitive Sea Areas (PSSA) offshore and in the coastal area where development should be excluded. PSSA are selected on basis of their high natural values and increased risk of oil spill damage, taking into account a buffer zone;
- Zones where development can be conditionally permitted. Such permits would depend on specific and dedicated systems of oil spill contingency planning.

### 3.4 Maritime routing

The increasing quantities of crude oil to be transported along the Mauritanian coast will result in increasing risks because of the combination of potentially conflicting industrial activities: busy shipping lanes, economically important fisheries and the exploitation of oil and gas. At present the control system of the GoM of passages is limited to fishing vessels and does not include other ships like oil tankers. Modelling on the current situation by Woodside already shows large risks for collision near Cap Blanc with subsequent risks for Banc d'Arguin.

To ensure safe passage of all ships through Mauritanian waters the SEA needs to address:

- the current and expected risks of future collisions taking into account possible impacts on habitats and biota;
- alternative ways to minimize risks of collision by *e.g.* zoning of shipping routes
- a maritime traffic control system.

## 4. CONSISTENCY ANALYSIS

The purpose of this step is to identify consistency of the strategic plan with already existing policies, strategies and plans of GoM or subscribed by the GoM. Interagency co-operation on this point will avoid conflicting objectives, thereby increasing the effectiveness of SEA and its incorporation in existing strategies and plan. A meeting of the Stakeholder Forum on this topic will be able to identify specific points of attention.

Special attention should be given to the following plans:

- Plan d'Action Nationale pour l'Environnement of the MDRE;
- Code Environnemental Marine (in draft) of the MDRE;
- Plan Directeur d'Aménagement du Littoral Mauritanien (PDALM) of the MPEM;

- Plan d'Action Nationale pour l'Environnement et le Développement Durable (PANE) of the MDRE;
- Programme opérationnel de mise en œuvre du plan d'action national de la lutte contre la désertification of the MDRE;
- Programme Régionale de Conservation de la Zone Côtière et Marine en Afrique de l'Ouest 2004-2008 of the (PRCM) ;
- Cadre stratégique de lutte contre la pauvreté (CSLP) for Mauritania;
- Cadre de dépenses à moyen terme (CDMT).

## 5. SEA CONTENT

This chapter contains a framework for the content of the SEA based on the subsequent steps in the SEA process as indicated in Chapter 1 and good international practice.

The results of an SEA process are usually presented in a report that provides direction to the organizations that participated in the SEA activities and provide direction to subsequent policy-making. The report is proposed to contain the following chapters:

1. non-technical summary
2. scoping /shared vision / communication and consultation strategies /description of background and objective of the initiative / scoping towards impacts / shared vision on problems and objectives / results of consistency analysis
3. formal requirements for this SEA / legislative framework
4. base-line data and scoping of potential impacts of oil and gas development on fishery, natural values, social and economic structure
5. description of policy alternatives
6. impact assessment
7. identification of gaps in information
8. enforcement, monitoring and evaluation

### 5.1 Non- technical summary

#### **Non-technical summary**

The summary will be the part of the SEA that will be most read by decision makers and stakeholders. Therefore, it should be non-technical and focus on:

- Shared vision on problems and objectives;
- Policy alternatives elaborated;
- Choice of preferred policy alternative;
- Enforcement, monitoring and evaluation.

## 5.2 Scoping / Shared vision

### **Consultation, Communication and Commitment**

The SEA should address consultation issues:

- How stakeholders were identified and whom they represent;
- How different stakeholder groups were informed and involved in the SEA process; methods used to ensure meaningful participation.

The content of the SEA should be widely supported by the participants. The SEA should describe the commitment of the stakeholders to the scope of the SEA and of policy alternatives. It also should describe how the input of stakeholders was incorporated into the SEA study.

### **Shared vision on problems and objectives**

A shared vision on problems and objectives related to oil/gas development is necessary as this shared vision determines the scope of policy alternatives to be developed in the SEA. (see chapter 3). The SEA is to describe the results of this discussion.

### **Consistency analysis**

Describe the results of the consistency analysis (see chapter 4)

## 5.3 (Formal) Requirements SEA

The SEA should describe:

- the (absence of) formal requirements for SEA in Mauritanian legislation,
- how (internationally accepted) requirements on impact assessment are met in practice.

## 5.4 Baseline data

The SEA is to provide baseline information on the existing situation, and the expected environmental and socio-economic situation in case no new oil/gas developments take place (business as usual/autonomous development).

The baseline information gathered will not only serve the SEA but will also serve future EIAs. The existing EIA and SIA for the Chinguetti project are valuable input for the SEA when review comments on these documents are taken into account.

### **5.4.1 Existing situation**

The baseline information on the **existing** situation should preferably be given in the form of maps and tables and should include:

1. Mapping of non-renewable resources and activities related to their exploitation (map 1):
  - existing and oil/gas production sites and their safety zones, exploration and exploitation concessions;
  - existing shipping routes.
2. Mapping of renewable resources (map 2): marine and coastal values
  - hydrodynamic characteristics;

- fish, cephalopod and sea mammals (artisan and commercial);
  - (internationally) valued ecosystems (Banc d'Arguin, National Park Diawling), dunes and the Mauritanian coastal zone (the ecologically important up welling area). For each of the valued ecosystems and for each habitat the physical characteristics are to be described (current, wind, waves etc.). Per habitat a well-founded selection of species can be used as indicator for the impact assessment based on distribution, numbers/densities, seasonal patterns and characteristics (spawning area, nursery area, breeding area, wintering area).
3. Basic demographic indicators comprising, *as far as possible* on map (Map 3):
- Analysis of population growth in Nouakchott over the past 10 years; similarly for other coastal communities and Senegal;
  - Economic activities of coastal communities (up till Dakar): *e.g.* fisheries, fish processing, agriculture, livestock, tourism, trends over the past 10 years;
  - Commercial and artisan fishing: economic importance, species, fishing methods, problems/concerns, seasonal changes in fishing and fishing related activities, recent trends (*e.g.* decline in fish stocks);
  - Social stratification and cultural differences, trends over the past 10 years.

The following macro-economic indicators are also to be described as part of the baseline information:

- Inflation,
- exchange rate,
- interest, and product and consumer prices,
- income per capita and income distribution.

#### **5.4.2 Autonomous development**

As a reference to compare possible impacts of future developments, the SEA should contain information on the expected environmental and socio-economic situation in case *no* new oil/gas developments take place (business as usual/autonomous development).

Information should include important developments, such as:

1. developments in the fishery sector;
2. harbour development and coastal defence.

##### **1. Fishery sector**

Over fishing and the use of non-sustainable fishing methods by commercial and artisan fishery is already apparent. Fishery agreements with the European Union and increased activity of Senegalese vessels will aggravate the problem. These developments need to be described to put them into perspective with the risks of the oil industry in order to determine how both sectors can co-exist and cooperate to ensure their sustainability.

##### **2. Harbour development and coastal defence**

A large part of the Mauritanian coast is protected by a relatively narrow band of (small sized) natural dunes. The natural coastal defence is under threat where people interfere with the coastal system, *e.g.* by building harbours. The severe coastal erosion south of the Port de l'Amitié is an example of such an

effect. The restoration of this coast, plans for the extension of this port and the construction of a new fisheries harbour further north therefore put coastal defence on the agenda of the GoM. Since these developments are to some extent linked to the oil/gas activities and may have considerable environmental and social impacts, the SEA should address how oil/gas activities, harbour development and coastal defence can be combined in a sustainable way.

## 5.5 Description of policy alternatives

The SEA should give the arguments for developing the specific policy alternatives, with reference to the shared vision on problem analysis and objectives (as described in chapter 3).

## 5.6 Impact assessment

### 5.6.1 General

For the comparison of alternatives international literature gives valuable gross lists<sup>11</sup> for impact assessment. As time will be restricted a well founded selection of the most relevant impacts can be made.

The indicators to describe the existing situation and autonomous development (as described under 5.4.1 and 5.4.2.) may be used as indicators for the impact assessment.

Additionally the impact assessment should describe *expected changes* in:

- competitiveness of other sectors such as fishery, agriculture, livestock, forestry, biodiversity, and tourism; brain drain in other sectors/availability of qualified staff/employment possibilities
- migration: extra influx to Nouakchott of people searching for work, availability of infrastructure and services,
- social and political situation.

Appendix 8 gives more detail.

### 5.6.2 Accumulation of environmental impacts

Cumulative effects occur in areas where the range of influence of activities overlap and affect the same area. An accepted method to get insight in the accumulation of impacts is to overlay the following maps:

- Impact contours of existing and planned oil/gas activities and transport activities;

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<sup>11</sup> See for example:

- Strategic Environmental Assessment, UK Public Consultation for Offshore Energy Licensing, <http://www.offshore-sea.org.uk/site/index.php>, 2006);
- NOVA Scotia Offshore Petroleum Board, Halifax, N.S., Canada. Strategic Environmental Assessment of Potential Exploration Rights Issuance for Eastern for Eastern Sable Island Bank, Western Banquereau Bank, The Gully Trough and the Eastern Scotian Slope, June 2003;
- Biodiversity in EIA&SEA; Background document to CBD Decision VIII/28: Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment.

- Distribution contours of existing renewable resources : marine and coastal values.

A synthesis map can be produced indicating where potential cumulative effects can occur. Geographic Information Systems (GIS) is the most appropriate tool to display the accumulation of impacts and seek the environmentally most acceptable alternative. It will also help in creating visual images for decision-making.

In evaluating cumulative impacts it is important to realize that in general cumulative impacts caused by an increase of disturbance and/or pollution is larger than the sum of the individual impacts.

### **5.6.3 Detail of impact description**

Because of the strategic character of the study, impact descriptions do not necessarily need to be quantified. A qualitative expert judgement, with good argumentation, can be sufficient.

At the strategic level there will almost always be significant uncertainties to deal with. However, practice shows that this uncertainty does not preclude an effective SEA, as long as uncertainties and their consequences are clearly discussed and sensitivity analyses are used where needed. The environmental information will usually be sufficient to choose the best alternative and to identify appropriate mitigating measures.

## **5.7 Description of gaps in information**

If data is not available and can not be obtained in due time, the SEA should address the importance of this lack in information for the choices to be made.

If important baseline information for the SEA is lacking, efficient ways to timely fill the gaps, can possibly be found through collaboration with stakeholders.<sup>12</sup>

To gather solid baseline data it is important to use the information that can be supplied by relevant stakeholders, such as IMROP, IUCN, PRCM, Woodside, WB and the Demographic Institute.

## **5.8 Enforcement, monitoring and evaluation**

### **5.8.1 Enforcement**

The lack of capacity within the GoM to enforce legislative procedures, legal requirements, rules, regulations and standards derived from a formal strategic plan was emphasized by all stakeholders. The Environmental Commission should give priority to develop (institutional) capacity for enforcement within

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<sup>12</sup> Regular missions on fish survey by IMROP could be combined by (more frequent) counts of seabirds and counts of sea mammals.

the GoM. Budget and programme for enforcement capacity should be decided upon preferably in the beginning of the SEA process.

The SEA should at least describe:

- the legal status of the strategic plan;
- how to incorporate legal requirements, rules and regulations in future Production Sharing Contracts (PSCs);
- responsibilities within the GoM to enforce such legal obligations and technical standards prescribed in the PSCs and Codes of Conduct;
- control system for passages of ships;
- responsibilities within the GoM to:
  - act in case of calamitous spills;
  - act in case of non-compliance to the formal conditions set out;
  - monitor HSE standards in relevant projects;
  - monitor long term impacts of low toxicity discharges.

### **5.8.2 Monitoring and evaluation of the SEA**

Monitoring serves a dual purpose:

- check whether the strategic plan is implemented according to the decisions taken, and
- verify whether the implementation of the plan results in the expected environmental or societal consequences which have been addressed in the SEA and decide on any additional action to be taken.

The Commission recommends to include in the SEA report provisions (including financial) for the ways to monitor the implementation of the plan and to monitor environmental and societal consequences of the plan.

The NCEA advises to address among others the monitoring and evaluation of:

- realisation of and follow-up on a code of conduct;
- compliance to the conditions set out in the strategic plan, code of conduct or PSC (at irregular intervals);
- short-term environmental impacts (intensive during spill moments);
- oil spill monitoring (intensive monitoring, hour to hour) in case of spills;
- ship motions (especially crude oil carriers): continuously;
- long term environmental impacts: by routine or by campaign at regular intervals;
- long term societal impacts; by routine or by campaign at regular intervals.

## **5.9 Quality assurance**

According to Mauritanian legislation, the Ministry responsible for the Environment is to review and approve an EIA document. As legislation for SEA is lacking, no specific procedures are available. In the current situation it is recommended to give the Environmental Commission the lead in the preparation of this decision on the acceptability of the SEA.

Under chapter 2 SEA Process the need for continuous quality assurance during the undertaking of the SEA is addressed. It is recommended to include an additional tollgate in the process by including independent quality assurance in the process by an independent organization.



## **6. DECISION**

Once the SEA report is approved, the Commission recommends organizing stakeholder meetings to discuss the implication of the SEA results for the final decision on the strategic plan, in particular in relation to the selection of preferred alternatives.

As part of good SEA practice and to enhance transparency the NCEA recommends that formal decisions be justified referring to stakeholder comments and published.

## **7. FOLLOW-UP AND MONITORING**

To ensure the adequate implementation of the strategic plan, annually an account prepared by the key ministries (MEP, MDRE, MPEM, MAED) should be presented to the Prime Minister and Parliament, including:

- a check whether the strategic plan is implemented according to the decisions taken;
- a check on monitoring results and whether adequate supportive or remedial action – when needed- has been taken or should be taken.

Additionally a full report giving detailed information, should be prepared every two years.

The Environmental Commission should coordinate this follow-up. In the preparation of the account and full report the Stakeholder Forum of the Environmental Commission should have an advisory role. To achieve maximum transparency the annual account and full report is to be made public to inform all stakeholders.