APPENDICES

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

(appendices 1 to 8)

APPENDIX 1

Assignment for the advice by the NCEA
Mandat pour l'avis de la CNEE

Les Termes de Référence pour l'avis de la CNEE ont été établis au cours de la visite de la CNEE en Mauritanie du 26 au 29 avril, 2006. Les conclusions de cette mission se résument par la présente aide mémoire (Référence OS25 065-091). L'aide mémoire a servi de fil conducteur à la rédaction des Termes de Références pour l'Evaluation Environnementale Stratégique.

Les conclusions sont présentées selon l'ordre des objectifs de la mission :

1. Entretiens avec les représentants des pouvoirs publics mauritaniens, Woodside Energy LTD et les parties prenantes

A partir du programme établi par M. Hajjar (Consul Honoraire) et M. Barreck (Ministère des Pêches et de l'Économie Maritime), un ou plusieurs entretiens ont eu lieu, de façon très efficace, avec les personnes suivantes :

* le Président
* le Ministre des Pêches et de l'Economie Maritime
* le Ministre de l'Equipement et des Transports
* le Ministre du Développement Rural et de l'Environnement, par l'intermédiaire du Ministre de la Santé et des Affaires Sociales
* le Ministre du Pétrole et de l'Energie
* Woodside Mauritanie PTY.LTD
* IUCN

Par ailleurs, lors d'une réunion commune des fonctionnaires des ministères, de l'IMROP et de l'IUCN, les particularités techniques de l'extraction offshore du pétrole et du gaz ont été discutées, ainsi que celles du développement littoral.
Nous avons visité le port de Nouakchott pour nous informer sur place du développement du port et des problèmes concernant les risques d'inondations.

Les entretiens, ainsi que notre visite du port, nous ont donné une bonne idée des priorités politiques du Président et des Ministres que nous avons rencontrés. Non seulement nous y avons discuté de l'extraction offshore du pétrole et du gaz en relation avec la pêche, la nature et l'environnement, mais nous avons également pu nous faire une idée sur le développement des autres activités économiques– liées pour une part à l'industrie offshore – sur la côte, sur l'extraction on shore de pétrole et de gaz ainsi que sur le développement touristique.
Ces informations seront très utiles pour définir la portée de l'étude stratégique sur les effets de l'extraction offshore de pétrole et de gaz (voir 3è point.)
Sont considérés comme objectifs prioritaires:

1. Le renforcement de la côte afin d'éviter les inondations. Ce point particulier a été au centre de l'entretien avec le Président. Au cours des entretiens avec les ministres, l'urgence de cet objectif a également été souligné, suite à l'inondation marine en mars dernier au sud de Nouakchott. Même si une étude spécifique sur le renforcement de la côte ne fait pas partie en tant que telle du mandat de la CNEE, elle sera très utile pour déterminer l'impact de l'EES à mettre en place. L'Ambassade des Pays-Bas et la Commission s'attachent à ce qu'à court terme, des experts néerlandais élaborent un plan de renforcement de la côte. (p.m. La visite a eu lieu au cours de la semaine 19).
2. Le développement de l'extraction de pétrole et de gaz. Tous les ministres ont indiqué que les intérêts de la nature et de l'environnement seront considérés à égalité avec

les intérêts économiques. Le Ministre du Pétrole et de l'Energie a souligné qu'il ne peut être question d'exploitation si cela engendre une dégradation de zones naturelles de grande valeur.

3. Différents interlocuteurs ont relevé le manque de réglementation et de capacité institutionnelles pour arriver à une politique intégrale balancée entre les différents intérêts. On constate une lacune de connaissances à la fois sur les techniques d'extraction du pétrole et du gaz et sur les conséquences environnementales et les normes qui y sont liées. L'un des principaux problèmes réside dans l'absence d'une structure adéquate chargée de délivrer les autorisations, d'en faire respecter les conditions, de contrôler leur application, un plan de suivi ainsi que de donner l'alerte en cas de catastrophe.

2. Rassembler des documents, parmi lesquels les études déjà effectuées

Il existe déjà un grand nombre d'informations écrites disponibles. L'annexe 1 donne un aperçu global des informations actuellement disponibles.
Les principales nouveautés sont:

- Le Plan de Gestion pour le Projet de Chinguetti de Woodside
- la législation sur l'Evaluation de l'Impact sur l'Environnement ; Loi-cadre (2000-045) sur l'environnement, qui définit les contraintes générales pour la réalisation des évaluations d'incidences sur l'environnement, et le décret (2004-094) relatif à l'Etude d'Impact Environnemental, qui donne une description globale du processus de l'EIE et de son contenu.

Les informations non reçues mais promises sont:

- L'étude de l'EIE pour le projet de Chinguetti, exécutée par le bureau-conseil norvégien Skanpower Riskmanagement à la demande du Ministère du Pétrole et de l'Energie
- L'étude des possibilités techniques pour l'extension du port. Cette étude ne s'est pas penchée sur les incidences environnementales des différentes alternatives.
- Passages utiles du nouveau Plan de Stratégie de Réduction de la Pauvreté (PSRP) en préparation.

3. Prendre connaissance d'autres initiatives EIE/EES[1] et du niveau de connaissance sur l'EES

Autres initiatives EIE/EES
Au cours de cette première mission, la Commission n'a constaté aucune autre initiative d'EIE/EES. Toutefois, il a été notifié aux interlocuteurs que pour toute activité future dans le domaine de l'extraction de pétrole et de gaz, une EIE[2] sera requise.

Niveau de connaissance sur l'EES
Au cours des entretiens, nous avons remarqué que les interlocuteurs avaient une connaissance en termes généraux des possibilités qu'offre l'EES pour identifier les lieux de forage préférentiels et les conditions d'exploitation offshore, la cumulation des exploitations et la relation avec le développement de la pêche et du littoral.

[1] EIE= Étude d'Impact Environnemental ; EES= Étude Environnementale Stratégique
[2] EIS = Etude d'Impact Social

Le partage des responsabilités et des tâches entre les différents ministères, la façon dont les parties prenantes doivent être associées ainsi que le contenu concret de l'étude (notamment le niveau d'abstraction de la description de son impact) devront être précisés en détail dans les Termes de Référence ; ceci afin de garantir que cette étude bénéficie du soutien requis, autant par les dirigeants responsables que par les fonctionnaires techniques et les parties prenantes.

4. Sonder le soutien pour l'EES

Tous les entretiens ont révélé qu'il existe un large soutien pour la réalisation d'une EES. L'estimation de l'Ambassade à ce sujet est donc amplement confirmée.
Il existe par contre différentes idées sur la portée de l'étude stratégique. Toutes les personnes concernées ont indiqué que cette étude devra en tous les cas concerner les développements en mer et sur le littoral, notamment l'extension du port et le renforcement de la côte. Au cours de l'un des entretiens, il a été mentionné que le développement de l'extraction on shore de pétrole et de gaz devrait également être prise en compte dans l'étude stratégique.

Vu les relations entre les activités offshore et le développement de la pêche et du littoral, nous pensons qu'il est évident de considérer ces types de développement dans une même EES. Le développement on shore d'exploitation du petrol, lui, aura sans doute lieu à plus long terme. Pour éviter de produire une étude trop volumineuse, il ne nous semble pas nécessaire ni souhaitable d'impliquer entièrement le développement on shore d'exploitation du petrol dans cette étude. L'EES pourra inclure une première évaluation globale de l'influence du développement on shore (sous forme d'une analyse de sensibilité), notamment à l'égard des activités portuaires.

5. Déterminer l'expertise requise pour le groupe de travail CNEE

Comme il est d'usage dans la méthode de travail de la CNEE, c'est un groupe de travail composé d'experts indépendants qui élaborera les conseils pour l'EIE sur le Projet Chinguetti ainsi que les Termes de Référence pour une EES.
Suite aux résultats de notre mission, nous jugeons également nécessaire la participation des experts suivants :

- expert en extraction de pétrole et de gaz
- expert en hydraulique et en propagation des pollutions
- expert en écologie maritime et estuarienne
- expert en pêches et sociologie
- expert en économie du développement.

6. Plan de travail proposé

Notre proposition est que le groupe d'experts se rendra en Mauritanie dans le premier semaine de juillet 2006 (3-7 juillet) l. L'objectif de cette mission est triple :

- Compléter, au moyen de visites aux plateformes pétrolières de Woodside, Banc d'Arguin, de l'IMROP et des pêcheries le long du littoral, la vision des experts.
- Discuter de la proposition de conseils pour le Projet Chinguetti (EIE,EIS, Plan de Gestion) avec les ministères concernés, Woodside et les principaux intéressés.

- Discuter de l'ébauche des Termes de Référence avec les ministères concernés et les principaux intéressés.

Pendant la période précédant la deuxième mission, le groupe de travail étudiera les ouvrages disponibles. A partir de là, il pourra définir les propositions de conseils, qui seront envoyées avant le début de la deuxième mission aux interlocuteurs concernés.

Les conseils définitifs seront rédigés et distribués à toutes les personnes concernées. Ils seront également publiés sur le site web de la CNEE (www.eia.nl).

APPENDIX 2

Netherlands Commission for Environmental Assessment
Strategic Environmental Assessment - Views and Experiences (1)

What is SEA for us?

We define Strategic Environmental Assessment (SEA) as a way to bring people together in planning processes, and structure and feed their debate on the environmental consequences of strategic choices. More concrete, SEA is a tool to:

1. structure the public and government debate in the preparation of policies, plans and programs
2. feed this debate through a robust assessment of the environmental and, where required, other consequences
3. ensure that the results of assessment and debate are taken into account during decision making and implementation.

This means that public participation, transparency and good quality information are key principles. SEA is thus more than the preparation of a report; it is a tool to enhance good governance. Where needed, SEA may also include social and economic issues.

SEA is widely applied in different forms and shapes, and in countries as different as Canada, Nepal, Mozambique and Bolivia. As EIA aims at better projects, SEA aims at better strategies, ranging from legislation and country-wide development policies to more concrete sector and spatial plans. The variation in application is reflected in a number of definitions for SEA. But all good practice SEAs do comply with common basic principles, e.g. IAIA's SEA Performance criteria (see Links).

SEA for Poverty reduction
In 2002 Ghana published its Ghana Poverty Reduction Strategy. When drawing up this strategy, little attention was given to environment issues, such as the impacts of transport, agriculture and private sector developments on the environment. It was, therefore, decided to carry out an SEA to adjust the strategy where needed. SEA was applied at both national and district level, providing win-win options for the future update of the GPRS and recommendations on how to make over a 100 district development plans more sustainable.

What are the advantages of SEA?

The final objective of SEA is to contribute to sustainable development, poverty reduction and good governance. Advantages of SEA to decision makers are:

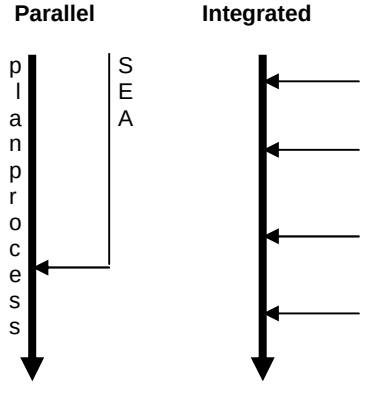
- Enhanced credibility of their decisions in the eyes of stakeholders, leading to swifter implementation;
- A better understanding of the cumulative impact of a series of smaller projects, thus preventing costly and unnecessary mistakes;
- Better insight in the trade-offs between environmental, economic and social issues, enhancing the chance of finding win-win options;
- Easier assessment at the project level because strategic discussions, e.g. on locations, have already been brought to a conclusion.

Some examples of SEA benefits in the experience of the Netherlands Commission for Environmental Assessment shown in the three boxes on this key sheet.

SEA for transport policy
In Mozambique an EIA was planned for the proposal to construct a highway to the coast for the transport of bulk products from an inland titanium smelter. Government decided to carry out an SEA to look at a strategic alternative that might be more beneficial for the country as a whole: the upgrade of a railway line. In addition to transport of mining products, this would also improve conditions for local population and eco-tourism. On the basis of the SEA it was decided that the concessions for the mining companies are granted only for 20 years. During this period an alternative infrastructure plan with a North-South connection has to be developed. Until then the East-West road can be constructed and used.

How is SEA conducted?

Starting points for SEA design are the national context and the characteristics of the planning processes in which SEA is applied. Traditionally, SEA is often applied as a stand alone process, parallel to planning. This is a good way of learning how to do SEA. From here, SEA can be further developed into its most effective form: integrated in the planning process, bringing stakeholders together during key stages of the planning process and feeding their debate with reliable environmental information.



Main steps in integrated "good practice SEA"

Screening:
- get lead and environmental agencies together to decide on the need for SEA

Scoping:
- identify the stakeholders in the planning process and announce the start of this process
- develop with all stakeholders a common vision on (environmental) problems, objectives, and alternatives
- check consistency of the new objectives with those in existing policies through inter-agency cooperation
- use the results of the above steps to define the Terms of Reference of the SEA

Assessment:
- carry out the assessment, document its results and make these available
- organise an (independent) quality assurance of both SEA information and process

Decision making:
- discuss with stakeholders what the results of the SEA mean for decision making
- justify in writing the (political) choices that have been made in the finally adopted policy or plan

Monitoring:
- monitor the implementation of the adopted policy or plan, and discuss outcomes with stakeholders and define actions to deal with unforeseen effects.

SEA is flexible, i.e. the scope and level of detail of the above steps can differ depending on time and resources available. Time mainly depends on the timing of the planning process. Costs for SEA may vary correspondingly from a few thousand to half a million Euros.

SEA for spatial development
The Dutch province of North Holland developed a new spatial plan to deal with a number of pressing issues, such as poor economic growth, traffic congestion and increasing pressure on nature. An SEA was carried out to find the most sustainable alternative. To begin with, four possible scenarios were worked out, each from a different perspective. One scenario focused on economic growth, an other on protection of the existing identity of the region, a third on development of the tourism sector and a fourth gave priority to nature and quality of life. Through stakeholder participation, involving both civil society and top decision makers, the four scenarios were translated into two integral alternatives. In one alternative it was accepted that the region needed to change. The other tried to find solutions within the existing identity of the region. The SEA enabled to find the best option: a plan based on the second alternative, including the best elements of the first one.

Differences between EIA and SEA

The key phases of SEA resemble those in EIA. However, the actual tasks during those phases may be quite different.

	SEA	**EIA**
Screening	Mostly decided case by case	Projects requiring EA are often listed
Scoping	Combination of political agenda, stakeholder discussion and expert judgement	Combination of local issues and technical checklists
Public participation	Focus on representative bodies	Often include general public
Assessment	More qualitative (expert judgement)	More quantitative
Quality review	Both quality of information and stakeholder process	Focus on quality of information
Decision making	Comparison of alternatives against policy objectives	Comparison against norms and standards
Monitoring	Focus on plan implementation	Focus on measuring actual impacts

When is SEA undertaken?

Ideally SEA is integrated throughout the development process of a specific legislation, policy, plan or programme, starting as early as possible. However, even when decisions have already been taken, SEA can play a meaningful role in monitoring implementation. For example, to decide on necessary mitigating actions or to feed into future renewal of decisions. SEA may even get the form of a sectoral assessment used to set the agenda for future policies and plans.

Services provided by the NCEA

With regard to SEA, the Netherlands Commission for Environmental Assessment can participate in and contribute to:
- Introductory training and general support
- Advising on TOR and quality review of individual SEAs
- Coaching and training on-the-job of SEA teams
- Introduction and design of SEA systems (see separate Key sheet – under preparation)

Our partners in SEA usually are the planning and environmental ministries. You are most welcome to contact us for further information on possible co-operation.

Links
- Netherlands Commission: www.eia.nl (including SEA database and other key sheets)
- IAIA SEA Performance criteria: www.iaia.org
- See also the EA keysheet: www.keysheets.org

Netherlands Commission for Environmental Assessment
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Website: www.eia.nl

APPENDIX 3

Project Information and Composition of the Working Group

Proposed activity: The Netherlands Commission for Environmental Assessment (NCEA) has been requested by the Government of Mauritania to advice on the Terms of Reference (ToR) for an integrated Strategic Environment Assessment (SEA) of the offshore development of oil and gas exploitation and its interaction with fishery and coastal development. The ToR elaborates how the SEA should address two major themes. The first theme concerns 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. The second theme addresses the ambition level for technical requirements given their interaction with the use of renewable resources (fishery, landscape, biodiversity, and culture). The general objective of the SEA is to provide 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, the SEA structures the government and public debate. 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 as it deals with the questions on where, when and how will already have been dealt with at the strategic level.
Category: DAC/CRS code 32262

Project number: 065

Procedural information:

Letter of request	: 13 March 2006
Checklist: Results of the preparation mission by the NCEA (Appendix 1)	: 10 May 2006
Advisory review submitted (draft)	: 22 September 2006

Composition of the working group:
Mr Maarten Jan Brolsma
Mrs Trudi van Ingen
Mr Cor Smit
Mr Huib de Vriend
Mr Martin Zwanenburg

Chairman:
Mr Aad van der Velden

Technical secretary:
Mrs Veronica ten Holder
Mr Johan Brons

APPENDIX 4
Programme of the site visit

Monday, July 3	
	Mr Mohmed Moctar Ould Hacen
World Bank	
Tuesday, July 4	
Observatoire du Littoral Mauritanien	Mr Aboubakry Thiam
	Mr Moahmed Lenier Sittywafor
Ministère des finances	
Ministère de l'Energie et du Pétrole	Mr Itawal Omron Ould
	Mr Ahmed Yeslem Ould Ahmed
	Mr Sidi Ould Sadva
Société Mauritanienne des Hydrocarbures	Mr El Hadiamy Ould Mohamed M'Barreck
	Mr El Hadremy
Agence de Développement Urbain	Mr.Mohamed Hakmoud Ould Ahmed
	Mr Isakha Diagana
Ministère des Affaires Economiques et du Développement	Mr Ishaq Ould Ahmed
Ministère des Pêches et de l'Economie Maritime	Mr Mohamed Ould Sidi
	Mr Mohamed M'Bareck O Soueikzu
Programme de Développement des Nations Unies	Mr Maoulad N'Díaye
Délégation Surveillance des Pêches et au Contrôle en Mer (Nouâdhibou)	
Institut Mauritanien de Recherches Océanographiques (Nouâdhibou)	Mr Cheikh Abdellah Ould Inejih
	Mr Khallahi Brahim
	Mr Hamoud Taleb,
	Mr Aly Ould Yahya Dartige
	Mrs Bowba Khaless
Parc National Du Banc d'Arguin (Iwik)	Mr Antonio Araujo
Wednesday, July 5	
Woodside	Mr Coleman (Woodside Perth)
	Mr Graham Booth
	Mr Brendan Augustin
World Bank	Mr Mohmed Moctar Ould Hacen
Ministère du Développement Rural et de l'Environnement	Mr El Hadrami Ould Bahneine
	Mr Mohamed Lemin El Hadrami
	Mr Diop, Boubacer
	Mr Hamoud Ould Sid'Ahmed
Fédération Nationale des Pêches	Mr Mohamed Mahmoud Sadegh
	Mr Sid Ahmed Ould Abeid
Université de Nouakchott	Mr Aheydi, Mohamed Taleb
Association Mauritanienne des Evaluateurs d'Impact Environnemental	Mr Brahim Sall
UICN	Mr Mohamed Lemine Ould Baba
Parc National Du Banc d'Arguin	Mr Sidi Mohamed Ould Moine
	Mr Olivier Ruë
Renforcement côtier	Mr Bram Bliek (Svasek Hydraulics)
Thursday, July 6	
Société allemande pour la coopération technique	Mr Karl P. Kirsch-Jung
	Mr Rainer Geppert
Parc National Du Banc d'Arguin	Mr Olivier Ruë

Union Européenne	Mr Ricardo Diez
Agence Française de Développement	Mr Gilles Chausse
Ministère des Affaires Economiques et du Développement	Mr Khayar Fall
	Mr Mohamed El Moctar O. Sidi Bacar
Société Mauritanienne des Hydrocarbures	Mr Aboubakr Ould Maroini
Conseiller Economique du Premier Ministre	Mr Mohamed Ould Nany

Friday, 8 July ; presentation of preliminary findings : EIA/SIA

Ambassade du Royaume des Pays Bas	Mr Johannes Jansing
Consulat du Royaume des Pays Bas	Mr Nabil Makhoul Hajjar
Woodside	Mr Brendan Augustin
	Mr Graham Booth
	Mr Tah Ould Zein
Société Mauritanienne des Hydrocarbures	Mr El Hadiamy Ould Mohamed M'Barreck
	Mr El Hadremy
Ministère du Développement Rural et de l'Environnement	Mr El Hadrami Ould Bahneine
	Mr Mohamed Lemin
Ministère des Pêches et de l'Economie Maritime	Mr Mohamed M'Bareck O Soueikzu
	Mr Mohamed Mahmoud Ould Moustapha Ould Bneijarn

Friday, 8 July ; presentation of preliminary findings : EIA/SIA and SEA

Embassy of the Netherlands	Mr Johannes Jansing
Woodside	Mr Brendan Augustin
	Mr Graham Booth
	Mr Tah Ould Zein
Ministère de l'Energie et du Pétrole	Mr Itawal Omron Ould
	Mr Sidi Sadva
Société Mauritanienne des Hydrocarbures	Mr El Hadiamy Ould Mohamed M'Barreck
	Mr El Hadremy
Ministère des Pêches et de l'Economie Maritime	Mr Mohamed M'Bareck O Soueikzu
	Mr Mohamed Mahmoud Ould Moustapha Ould Bneijarn
Ministère du Développement Rural et de l'Environnement	Mr El Hadrami Ould Bahneine
	Mr Mohamed Lemin
Parc National Du Banc d'Arguin / Ambassade de France / Union Européenne	Mr Olivier Ruë
Programme Régional de Conservation de la zone Côtière et Marine en Afrique	Mr Barthelemy Jean A. Bateino
	Mrs Blandine Melis
Observatoire du Littoral Mauritanien	Mr Aboubakry Thiam
UICN	Mr Matthieu Bernadaron
Société allemande pour la coopération technique	Mr Brahim Sall
	Mr Karl P. Kirsch-Jung
Svasek Hydraulics	Mr Bram Bliek

Visit of the National Park Banc D'Arguin (Tuesday, July 4)

Visit of the FSPO (Wednesday, July 5)

Ministère de l'Energie et du Pétrole	Mr Sidi Sadva
Ministère des Pêches et de l'Economie Maritime	Mr Mohamed Ould Sidi
Société Mauritanienne des Hydrocarbures	Mr Taleb Khyar Ould Sidi Bouya Bneijarn

APPENDIX 5

Documentation

A. Project Chinguetti

Environmental Impact Assessment

1. Woodside, Environmental Impact Assessment
    - Executive summary
    - Main document
    - Appendices
    - Technical reports
        - Marina fauna survey
        - Water quality study
        - Benthics surveys-FPSO location and carbonate Mounds
        - Oil spill modelling
        - Produced formation water
        - Discharge plume modelling
        - Modelling validation study
        - Oil westhering and dispersability testing
        - Ecotoxicity testing of Chinguetti rude oil
        - Shipping transit analysis
2. Sandra Kloff & Tom van Spanje, Compte rendu sur l'avant-projet d'Etude d'Impact Environnemental du Champ pétrolier Chinguetti découvert par la compagnie Woodside, Etude réalisée avec le soutien de l'Institut de Politique Minérale australien, janvier 2004
3. Woodside response to the background paper: A review of Woodside's Draft Environmental Impact Statement of the Chinguetti Offshore Oil development Project in Mauritania by Sandra Kloff & Tom van Spanje, January 2004.
4. Scandpower Risk Management AS, The Mauritanian Ministry of Mines and Industry. The Chinguetti Group. Mission report from visit in Nouakchott, May/June 2004, June 2004, draft

Plan de Gestion

5. Woodside, Système de gestion du projet de Chinguetti ; PGE-C, Plan environnemental pour la phase d'installation et de construction, juin 2005
6. Woodside, Système de gestion du projet de Chinguetti ; SSEQ-2 : Plan de gestion de l'environnement pour le Projet (PGE), octobre 2004
7. Woodside, Système de gestion du projet de Chinguetti ; PGE-0 : Plan environnemental pour la phase de mise en route et de production, Juillet 2005
8. Woodside, Système de gestion du projet de Chinguetti ; PGE-F : Campagne de forage de mise en exploitation 2004/05, octobre 2004
9. Woodside, 2005 Mauritania Exploration Offshore Drilling Campaign, Environment plan, July 2005
10. Woodside, Fisheries Interaction Management Plan (FIMP), Between the Oil Extraction Activities of the Chinguetti Project and the Fishing Industry in the

Islamic Republic of Mauritania, October 2005, prepared by MacAlister, Elliot & Partners
11. Woodside, Plan d'Intervention en cas d'écoulement accidentel d'hydrocarbures de Woodside Mauritanie (PLAN ERP 3241), décembre, 2005
12. Woodside , First Round Water Sampling Exercise, December 2005
13. Sandra Kloff, Loïc Trebaol & Clive Wicks, Analyse et recommandations relatives au plan de gestion environnemental pour la phase d'exploitation du projet Chinguetti. Pour le Ministère de la Pêche et de l'Economie Maritime, juin 2006, Version définitive.

Social Impact Assessment

14. Environmental Resources Management Australia Pty Ltd, Social Impact Assessment
    Volume 1: (Draft) Social Impact Assessment
    Volume 2: Appendices of the Draft Social Impact Assessment
    a. Terms of Reference
    b. Description of the project
    c. Method of impact evaluation
    d. Reference situation
    e. Exceptional impacts
    f. Consultation and information disclosure plan
    g. Elaboration of ToR
    h. Case studies
15. Sandra Kloff et Clive Wicks, Revue du projet de document SIA de ERM pour Woodside, pour PRCM, Fiba, IUCN, Wetlands International and WWF, Février 2006.

Production Sharing Contracts

16. sur la Zone A, 2006
17. sur la Zone B, 2006
18. sur le Bloc 6, 2006
19. sur le bloc Ta5 dans le Bassin de Taoudenni (Wintershall Aktiengesellschaft). octobre, 2005
20. sur le bloc Ta6 dans le Bassin de Taoudenni (Wintershall Aktiengesellschaft), octobre 2005

B. Legislation, Mauritania

21. Loi No 2000-045/ portant loi cadre de l'environnement, Présidence de la République Islamique de Mauritanie, 27 Juillet 2000.
22. Décret No 2004-094 relatif á l'Etude d'Impact Environnemental, Premier Ministre de la République Islamique de Mauritanie, 4 novembre 2004.
23. Décret No 022-2004 fixant attributions du Ministre des Pêches et de l'Economie Maritime et l'organisation de l'administration centrale de son département, 11 mars 2004.
24. Projet, Décret No….relatif au Domaine Public Maritime, (Délimitation du domaine public maritime, Extraction de matériaux sur le domaine public

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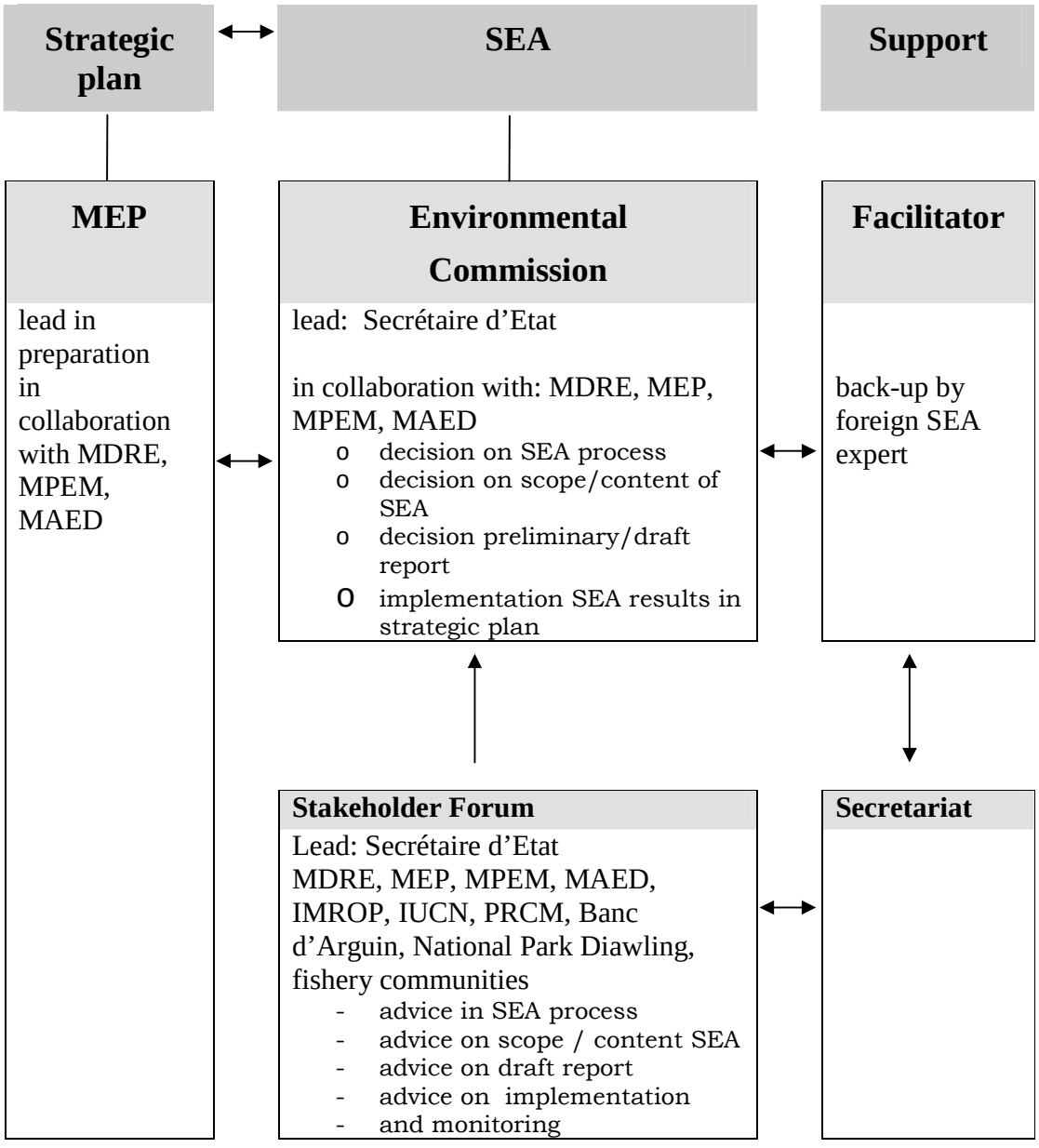
APPENDIX 6
Proposition Institutional Structure



APPENDIX 7

Technology of exploitation

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 etc). Future developments should then be carried out according to the best practices as developed in the SEA.

Focus is to be given on impacts caused by :

1. Seismic activities
2. Drilling and drilling discharges
3. Testing/flaring
4. Development activities (flowlines, subsea completions, FPSO or production platforms)
5. Oil spills
6. Discharge of Production Formation Water (PFW)

The scope of environmental impacts to discuss in the SEA will depend on the ambition level set by the GoM. If it is the ambition of the GoM to require and enforce best practises available when authorizing new developments, this is expected to reduce possible environmental risks considerably and could therefore lead to a narrowing down of the scope of subjects to be addressed in the SEA.

1. Seismic activities

Research has pointed out that catches of certain fish species can decrease temporarily because of seismic activities within a radius of some tens of kilometres. Marine mammals, specifically the smaller species (dolphins) leave areas with high noise levels. In the UK it is practice that marine mammal observers are on board during seismic activities with the authority to interrupt operations when marine mammals are in the neighbourhood[3].

Stakeholders appear to have different perceptions about the (potential) impacts of seismic activities. One perception is that seismic activities will at the most chase away some fish for a little while. Others are that seismic activities may change migratory routes of important fish species and mammals or that unexplained deaths of fish and marine mammals must be attributed to seismic activities.

It is therefore important that the SEA addresses this subject in order to create a common view on potential impacts as much as possible. The SEA should investigate whether past variations in the presence of fish and marine mammals, their migration routes and mortality are to be correlated to seismic activities in these areas. If this is the case, mitigating measures should be developed using the When, Where and How approach, *e.g.* restrict activities to a certain time of the year.

2. Drilling and drilling discharges

[3] See also: Environment Australia (2001) Guidelines on the application of the Environment Protection and Biodiversity Conservation Act to offshore seismic operations and larger cetaceans. www.ea.gov.au/epbc/assessaprov/guidelines/seismic/index.html

Whether drilling discharges are to be taken into account as a major issue in the SEA, depends on the permit conditions GoM wants to impose on new drilling activities. In its review of the Chinguetti project the NCEA advised to investigate in future EIA's the pros and cons of re-injection or (duly isolated) disposal on land of such drill cuttings. When these best available practices and techniques are prescribed in the drilling permits, there is no need to extensively address risks due to drilling activities extensively in the SEA.

If the GoM chooses to consider a more lenient standard the SEA will have to address long-term impacts of small amounts of oil adhering to drill cuttings on fisheries. These impacts are then to be compared with more environmentally friendly ways of disposal such as re-injection or collective disposal on land.
For future developments, one could consider investigating the merits of batch drilling (i.e drill a cluster of wells simultaneously which will reduce transport, increase efficiency and thus result in less impact on the environment). Drilling less wells by re-entering exploration or appraisal wells is another method worth investigating. And lastly multiple sidetracks (birdfoots) deviating from the same well, allow various parts of an oil or gasfield to be produced through the same tophole thereby reducing the top section to one hole instead of 4 or 5 single wells. This results, among others, in a reduction of drill cuttings on the seafloor.

3. Testing and Flaring
Discoveries need to be tested for various reasons. The technology involves the production of oil or gas under different test conditions to gauge the composition of the hydrocarbons, the productivity of the reservoir and many other factors relevant to the eventual development of the field. In the absence of a transport infrastructure, the produced hydrocarbons need to be burned since disposal to the sea is not an option.
The resulting flare can be seen from miles around and could pose a threat to migrating birds arriving from or leaving for Europe. It is therefore advised to investigate for each area the most opportune time and ways to carry out this operation.

In case the GoM should develop a policy of non-flaring in combination with mandatory permitting if flaring is necessary, the SEA could restrict itself to the description of a Code of Conduct on which such a mandatory permission should be based.
If a more lenient flaring policy is considered resulting in more frequent flaring, the SEA is to assess the best window of opportunity for the various activities of which the testing and flaring is only a component such as exploration, appraisal and development activities (the When, Where and How methodology).

4. Development activities
For each newly discovered oil or gas field specific designs (flow lines, sub sea completions, FPSO or production platforms) will be prepared to carry out the operations in the most optimal way. This may vary from a classic production platform planted on the seabed to a FPSO anchored in deep water. Sub sea completions and sea bottom flow lines may complete the total design but equally a platform could be designed for each cluster. Economics, safety, environmental standards are but a few of the parameters that control such decisions. In the SEA the latter constraints, environmental standards, should be developed for each environmental setting present in the area under consideration.

At present, the use of double hulls for oil tankers, is international standard. For anchored and immobile FPSOs however this is not (yet) obligatory (MEPC/Circ. 406, 10

November 2003). It has become clear that also double hulls are not without risks[4]. Inadequate maintenance of the double hull interior will lead to corrosion in the long term. Moreover salvaging damaged or sunken double hulled oil tankers pose severe problems.
The SEA should discuss the advantages and disadvantages of double hulled FPSO's in order to allow the GoM to decide upon setting double hulls as a requirement for FPSO or FSU vessels and if so, develop mitigating measures to be laid down in environmental management plans of projects.

5. Oil spills
The SEA is to address the risks of oil spills. Oil spills are a consequence of:

1. calamitous events
2. pollution by routine discharges and small accidents
3. natural seeps (oil/gas/condensate escaping naturally from a deeply buried source being an accumulation or a mature source rock)

Large oil spills
The stochastic oil spill modelling used in the EIA/EMP for the Chinguetti project is state-of-the-art. In the form presented in the EIA (forward tracking) it is especially suitable for risk analyses of spills from preset locations, such as the Chinguetti site. The alternative application of backtracking from particularly vulnerable areas, such as Banc d'Arguin and National Park Diawling has also been developed by Woodside. It is recommended to apply this technique for risk analyses with spills from moving objects, such as bypassing ships and for identifying locations where oil releases are particularly dangerous to environmentally sensitive areas, such as Banc d'Arguin.
Several NGO's (FIBA, IUCN, WWF and Wetlands International) in collaboration with PNBA, IMROP and GTZ developed a similar approach. Information on habitats, species and fishery activities could lead to establish protected areas (PSSAs) and conservation zones, thus avoiding oil spills in vulnerable habitats such as mangroves, coral reefs, sheltered inter-tidal flats and lagoons.
A backtracking model as developed by Woodside and the NGO's can be a very useful and powerful tool to support future policy making regarding drilling concessions and the position of international shipping lanes. It is therefore a valuable tool to be incorporated in the SEA.
Pollution by routine/discharges and small accidents
Uncertainties about long term and cumulative impacts of routine discharges and accidental small spills of offshore developments on the marine and fisheries sector are to be addressed. Long term international experience with offshore activities based on international technical standards can add to the necessary insight under which conditions (applied techniques, distance to the coast, temperature, depth at discharge location) risks exist. This information can be used for the choice on zoning of developments and conditions for development to minimize risks.

Oil spill contingency planning
In her review advice for the Chinguetti project the NCEA advices to develop a specific and dedicated system of oil spill contingency planning with different methods adapted to the extent, place and direction of a possible oil spill. In its view other measures than the use of dispersers are to be considered because, when used improperly dispersers

[4] Discussion on the merits of double and single hulled FPSOs can be found on the website from the Australian Maritime Safety Authority:
(http://www.amsa.gov.au/Shipping_Safety/Codes_Manuals_and_Reports/Comparison_of_single_and_double_hull_tankers.asp).

will lead to more damage on marine ecology than the impact of the oil spill itself. More dedicated measures with less risk of negative impacts are available. The SEA can take into account:

- the quantity of spilled oil; smaller quantities require other measurements than larger ones;
- the expected drift of the spill, *e.g.* towards vulnerable areas such as the Banc d'Arguin or the Senegal Delta;
- temporal changes throughout the year in distribution and abundance of sea birds and marine mammals;
- if action is needed, dedicated strategies could be:
  - use of vacuum cleaning ships for drifting oil spills;
  - use of protection screens beyond the direct vicinity of platforms;
  - allowing a spill to beach at a place where it does little harm, *e.g.* on sandy coasts where the oil spill can be removed using bulldozers.

6. Discharge of Production Formation Water (PFW)

At the moment Woodside has adopted a standard (EIA, Ch. 6.3, p417) for the discharge of Production Formation Water of < 30mg/l as a 24 hour average and between 30 and 150 mg/l for occasional discharges of < 90 minutes. However, industry discharge standards are presently between 20 and 30 mg/l oil-in-water but move towards 10 mg/l. The most ambitious standard is zero-discharge *e.g.* by the use of water injection wells to re-inject formation water. The SEA should address various options, including 10 mg/l and zero-discharge with their environmental, technical and economic consequences.

The SEA could also give insight into the conditions to enable use of water injection wells to re-inject formation water. It is to discuss the desirable mix of sea and formation water and the kind of tubing material that is to be used during future completions to prevent scaling of the reservoir and the tubing[5].

[5] Woodside is performing a feasibility study. The results of this study can be used as input for the evaluation in the SEA.

APPENDIX 8

Socio-economic Aspects

1. Macro economic conditions

The macro-economic indicators:

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

are important indicators of the current economic situation and of the prospective developments. The usual methodology to analyse the coherence between these indicators and to make estimations on economic development is through economic modelling.

The Country Economic Memorandum Update (World Bank) presents economic models that illustrate the impact of development scenarios for the pace of exploitation of the oil and gas reserves and different oil price levels. In addition scenario's for revenue allocation (to reduce the state budget deficit, allow debt payment and/or investments, or poverty alleviation) and fiscal policy could be integrated in economic modelling. The models, elaborated in collaboration with MAED, MoF (Finance) and MEP, provide a reference point for further development and comparison of alternatives and policy development.

2. Balanced development

Due to the prospect oil and gas exploitation, the oil sector will absorb an important part of the Mauritanian institutional and economic resources. A possible consequence may be a reduced competitiveness of other sectors such as fishery, agriculture, livestock, forestry, and tourism. Because of the reduced competitiveness these sectors will not be able to attract sufficiently qualified staff and sector imbalances may lead to regional inequities with consequent migration between regions. These changes may lead to social and political tensions between societal groups. Summarizing, the SEA is to address the (difference in) impacts of the alternatives with respect to a) competitiveness between sectors, b) migration, and c) social and political tension:

2a. Competitiveness

Analysis of competitiveness refers in general to profitability of the economic activities and more specifically to the availability of sufficiently qualified staff. With respect to the economic situation, sector organizations can provide data on the number or people economically involved in specific economic activities, profitability of the economic activities and predictions with respect to market and price development. With respect to the availability of qualified staff, one of the problems related to a strong export driven oil sector is that qualified staff will be absorbed by this sector. The MAED indicates that the negative impact of this so-called brain drain is underestimated. Mitigation measures are proposed in the recent Poverty Reduction Strategy Plan. The SEA could provide, for the most important sectors, indicators on:

- necessary and available expertise in private and public organizations,
- number of students for major education programmes,
- recent labour mobility (last 4 year).

2b. Migration
The impacts of induced migration are similar to the above described brain drain. Migration leads to typical local and regional effects. The development of the gas and oil extraction industry is likely to create an extra influx to Nouakchott of people searching for work. According to some informants this is already taking place despite measures taken by the government to improve social services in rural areas. Extra influx into Nouakchott will lead to an increased pressure on infrastructure and services (e.g. health care, provision of drinking water, waste management), increase the disease incidence, and potentially to social conflict.

Recent studies as reflected by the WB[6] illustrate the complex nature of migration and it is useful to take the lessons on migration experiences in the past. The SEA should give an expert judgment as well as statistical information on the demographic situation in Nouakchott and in coastal areas (age cohorts, neighbourhoods, semi-urban zones) on the indicators such as health and education, housing conditions, and employment. The Agence de Developpement Urbaine as well as other civil societies can provide the necessary data and at the same time articulate the interests of specific population groups.

2c Social and political tension
Experience from elsewhere shows that with the arrival of oil industry revenues the potential for conflicts increases. Underlying causes for such conflicts are unrealistic expectations about the benefits of the upcoming industry and perceived corruption and mismanagement of revenues. In the past, abuse of oil revenues has certainly occurred in other emerging oil industries.
It is proposed that *ex ante* assessment of the impacts of alternatives on the social and political situation be an explicit issue to be discussed by the Stakeholder Forum. The forum could refer to indicators that are available for international comparison, *e.g.* the Human Development Index (HDI), indicators on the incidence of corruption and on good governance indicators. Within the scope of the SEA its assessment will be limited to a qualitative expert judgement.
The programme for evaluating the effects of the above mentioned developments comprises a combination of expert judgement and consultation, of specific surveys, and of regular monitoring. A monitoring programme could be elaborated as part of the SEA process and at the same time provide input to the process as early as possible. Additionally, the SEA can make use of international experience in comparable situations in other countries.

[6] Mauritania, Managing Natural Resources : Challenges and Options, Country Economic Memorandum Update, June 2006, WB report no. 36386-MR.