

1 INTRODUCTION

1.1 PROJECT OVERVIEW

Woodside Mauritania Pty. Ltd. (Woodside) and its Joint Venture (JV) participants are developing the Chinguetti oil field off the coast of the Islamic Republic of Mauritania, North West Africa. The field was discovered in 2001 and is governed by a Production Sharing Contract (PSC) with the Mauritanian Government known as the PSC Area B Deepwater (PSCB). Woodside is Operator of the Chinguetti Project (the Project) on behalf of the JV participants (Hardman Group companies, BG Group companies, Premier Oil group companies, Roc Oil group companies and the wholly Government of Mauritania-owned Groupe Projet Chinguetti (GPC))⁽⁴⁾ and hence it is Woodside's policies and management systems that are applied to development and operation of the Project.

First oil production is expected in the first quarter of 2006.

1.2 REQUIREMENT FOR SOCIAL IMPACT ASSESSMENT

It is unusual to conduct a separate Social Impact Assessment (SIA) for an offshore development in deep water as these impacts would normally be addressed as part of an Environmental Impact Assessment (EIA). However, given the Project is the first oil and gas project in Mauritania, Woodside considered it appropriate to conduct a separate SIA.

An Environmental Impact Statement (EIS) was submitted to the Government of Mauritania in April 2004. The Government accepted the EIS in September 2004 with a condition requiring an SIA to be subsequently undertaken in accordance with relevant international standards and best-practice guidelines.

The Mauritanian Ministry of Energy and Petroleum is the Government authority with responsibility for co-ordination and approval of the SIA. The scope of the assessment is set out in *Chinguetti Development Project SIA - Terms of Reference (ToR)* (refer Annex A).

Woodside commissioned Environmental Resources Management Australia Pty Ltd (ERM) to conduct the SIA for the Project.

SIA is considered to be an international best-practice management tool and is expected by investors, governments, employees and external stakeholders of any significant oil and gas development project. It is a systematic process to examine potential socio-economic and health impacts of a Project. An

⁽⁴⁾ The Government of Mauritania is in the process of establishing a State-owned entity, the Société Mauritanienne des Hydrocarbures (SMH), to represent its interests in the emerging hydrocarbon sector.

important component in ensuring the integrity of the SIA is the participation of those most likely to be impacted.

The SIA for the Project identifies ways in which people and communities in Mauritania and in the coastal communities in northern Senegal could be affected by the Project. It also identifies ways of mitigating and managing any significant negative impacts and describes the mechanisms through which positive Project benefits will be enhanced.

1.3 REGULATORY FRAMEWORK

1.3.1 National Legislative Context

This is the first SIA undertaken for the oil industry in Mauritania. As is the case in many countries, Mauritania has no specific legislation governing SIA. The Project is regulated by the Ministry of Energy and Petroleum under the terms of the PSCB and this ministry has authority for oversight of the SIA.

Despite the absence of specific legislation to direct SIA standards, insight into expectations can be gained from the law governing EIA. *Law N° 2000-045*, 26 July 2000, pursuant to the Environment Code is the framework law on the Environment. Section II of *Law 2000-045* prescribes that an EIA be performed for all activities likely to have significant impacts on the environment. Article 18 requires that the EIA include a public consultation (“enquête publique”).

Following the Ministerial approval of the Project’s EIS that specified the requirement for an SIA, it was subsequently agreed that a ToR document would be prepared, in consultation with stakeholders, to guide the SIA. The ToR was approved by the Ministry of Energy and Petroleum in May 2005. The process by which the ToR was developed is described in Chapter 3 of this report.

In August 2005, the Military Council for Justice and Democracy appointed a civilian Government. Advice received by Woodside from the Military Council indicates that expectations in relation to the Project remain unchanged. On this basis the approved ToR for the SIA remain valid.

1.3.2 International SIA Standards

This SIA has been prepared to international standards. The SIA acknowledges the expectations of lenders, customers, key suppliers, national and international stakeholder groups (non-government organisations (NGOs) and inter-governmental organisations (IGOs)) and the international oil and gas community.

The collective standards of these groups are often considered to be best represented by the World Bank group policies. World Bank policies are complemented by the Equator Principles⁽⁵⁾, those prepared by the International Association for Impact Assessment (IAIA), the oil industry through the International Petroleum Industry Environment Conservation Association (IPIECA) and the International Association for Oil and Gas Producers (OGP).

The guiding World Bank (WB) policy for integrated assessment is Operational Policy (OP) 4.01 *Environmental Assessment*. There is further guidance relevant to a private sector oil project in the International Finance Corporation's (IFC) *Good Practice Note on Addressing the Social Dimensions of Private Sector Projects (2003)*.

In summary, these guidelines state that an SIA process should ensure that:

- social impacts are identified;
- opportunities for greater sustainability are identified;
- the findings are transparent;
- the process is as accountable and equitable as is realistically achievable; and
- findings are integrated with project decision-making.

The following documents provide additional guidance:

- WB Operational Directives 4.20: Indigenous Peoples (WB, September 1991);
- WB Operational Policy Notes (OPN) 11.03: Management of Cultural Property in Bank-Financed Projects (WB, September 1986);
- WB OPN 4.12 Involuntary Resettlement (WB, April 2004);
- IFC Procedure for Environmental and Social Review of Projects (IFC, December 1998);
- IAIA Social Impact Assessment: International Principles (IAIA, May 2003);
- IAIA US Principles and Guidelines: Principles and guidelines for social impact and assessment in the USA (IAIA, September 2003);

⁽⁵⁾ The Equator Principles are a set of principles established by the finance sector, to which many investment banks are signatories. The principles provide a framework for ensuring projects financed by signatory institutions are developed in a manner that is socially responsible and reflect sound environmental management practices.

- A Guide to Social Impact Assessment in the Oil & Gas Industry (IPIECA, November 2004);
- International OGP Annual Report (OGP, 2002); and
- Equator Principles (2003).

1.3.3 Woodside Corporate Requirements

As outlined below, Woodside's Business Principles⁽⁶⁾ also provide a basis for the need to conduct this SIA:

- *Principle 7 - We are committed to being a force for good through building long term relationships with governments and communities in the countries in which we operate; and*
- *Principle 8 - We fully, consistently and in a timely manner, disclose material information about the Company and its performance.*

Woodside is a signatory to the Extractive Industries Transparency Initiative (EITI). The aim of the EITI is to reduce corruption by encouraging governments and companies to share information openly with other stakeholders. Woodside is also a participant in the Partnering Against Corruption Initiative (PACI), and is a member of the World Business Council for Sustainable Development (WBCSD).

Particular attention is paid to the reporting of payments by companies to governments and government-linked entities. Transparency is one of a number of tools with a role to play in ensuring revenues from the Project contribute to improvements in quality of life and sustainable development in Mauritania.

Woodside's Environmental Standards and Aspirations (Section 3.1 on EIA and Section 2.1 in PCDP – Annex F of the SIA) requires an SIA to be undertaken for new developments and projects with the potential for significant social impacts.

1.4 PURPOSE OF REPORT

The purpose of this report is to document the data gathered and present the outcomes of the SIA, including the process of stakeholder participation that has been undertaken.

The report has been prepared by ERM, using research by sub-contractors in Mauritania and Senegal. In Mauritania, a joint project team was formed with

⁽⁵⁾ Woodside's Business Principles
<http://www.woodside.com.au/About+Woodside/Corporate+Information>

staff from the Office of National Statistics (ONS) and Tenmiya (a Mauritanian not-for-profit consultancy) with additional research by (NGO) Mauritania 2000. In Senegal, the sub-consultancy was with the Department of Statistics and Demography from the National School of Applied Economics in Dakar. Information has also been supplied by a wide range of Government and NGOs.

All dollar figures quoted are US dollars and expressed in current prices, unless specified otherwise. Values obtained in Euros are expressed in US dollars at the rate of 1 euro = 1.25 US dollars.

The Draft SIA Report is being released for a period of public comment during which stakeholders will have the opportunity to comment on the impacts identified and proposed mitigation measures.

1.5 ***FORMAT OF THE REPORT***

This report includes:

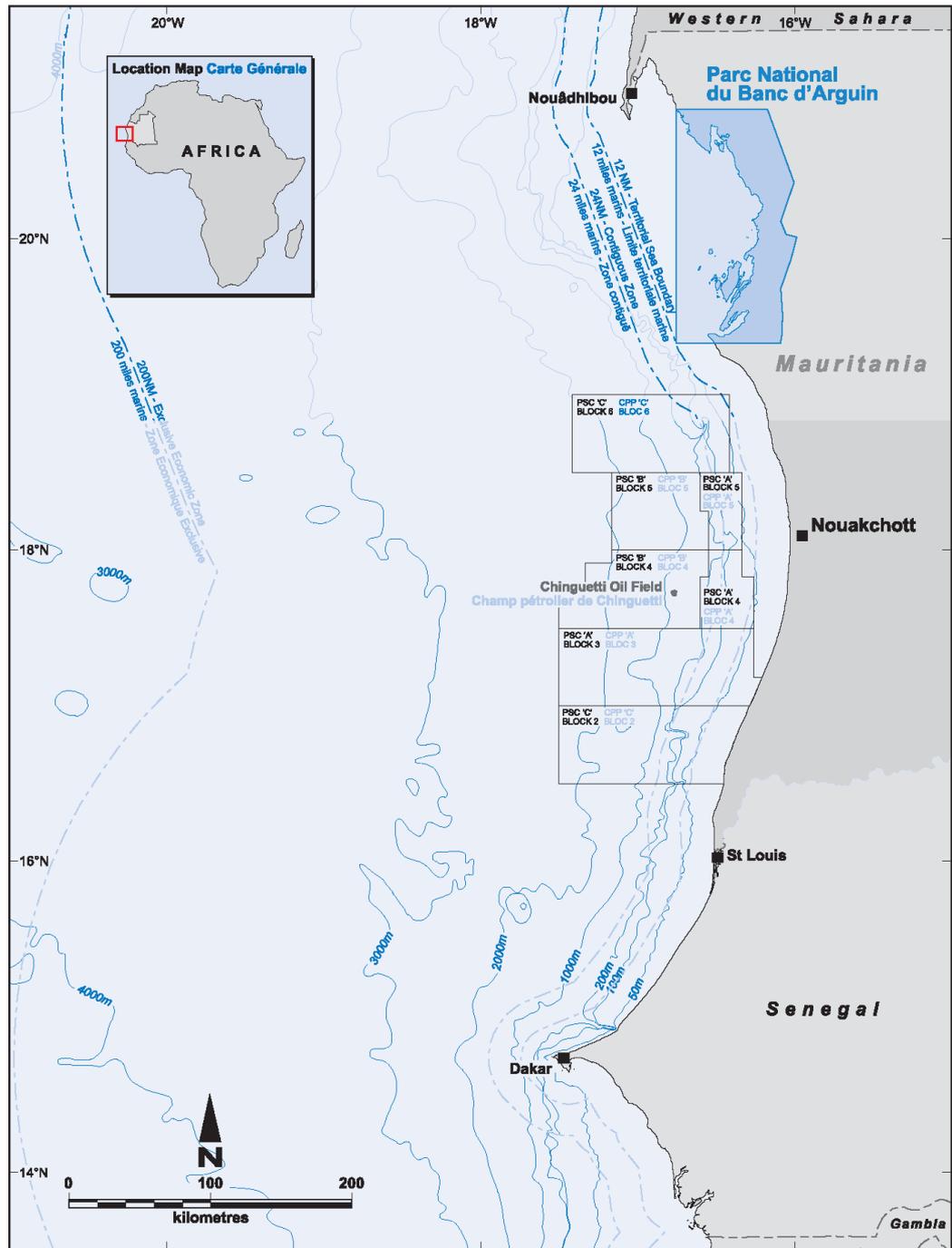
- Chapter 2 – a description of the Project and in particular, the aspects that could give rise to impacts (a fuller description is available in *Annex B*);
- Chapter 3 – an explanation of the SIA methodology and scope (a fuller description of the impact assessment methodology is contained in *Annex C*);
- Chapter 4 – presentation of the summary baseline profiles for Mauritania, the region of Nouakchott and the coastal settlements between Nouadhibou and Dakar (a fuller description of current socio-economic characteristics and conditions is contained in *Annex D1*, *Annex D2* and *Annex D3*);
- Chapter 5 – impact assessment and identification of mitigation measures (a detailed description of non-routine impacts is contained in *Annex E*); and
- Chapter 6 – social impact management framework.

2.1

LOCATION

The Chinguetti field is located in approximately 800m water depth, 80km south-west of Nouakchott in Mauritania and approximately 200km from St. Louis in Senegal (see Figure 2.1).

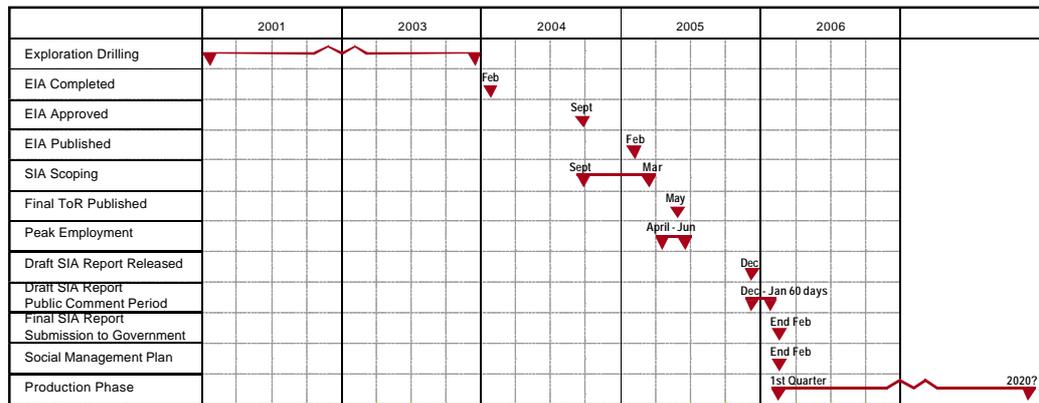
Figure 2.1 *Location of the Project*



The development concept for the field is based on an offshore, stand-alone development with onshore based support facilities. The facilities onshore are limited to only those that are required for the development and operations of the offshore infrastructure. First oil production is expected in the first quarter of 2006.

An illustration of Project milestones forms *Figure 2.2*.

Figure 2.2 *Project Milestones*



This Project description is focused on those components of the Project that are considered to have particular relevance to the SIA, most notably , a brief description of the infrastructure and activities associated with the development and the commercial arrangements under which the Project is being developed (see *Annex B* for a detailed description of the project, including the commercial agreement) Project alternatives including the ‘no projects’ option are not discussed in this report for a number of reasons:

- the Project had achieved major Government of Mauritania approvals and Final Investment Decision (FID) prior to SIA scoping;
- the precise location of offshore elements would not be material to the nature or scale of onshore components;
- the earlier EIA process considered offshore Project alternatives and each had similar onshore components;
- most onshore Project activities are restricted in where they can occur (eg. shipping can only realistically occur at the Port of Nouakchott; aircraft movements can only happen from the international airport);
- for routine impacts, interaction between aspects of the Project and affected livelihoods is most likely to occur onshore; and
- given the significant investment in exploration since 2001 relative to the expenditures within Mauritania from September 2005 onward, a large proportion of the effects of development of the Project have already been experienced.

2.1.1 Onshore Infrastructure

The Project has only limited onshore infrastructure and activities, including:

- supply ship movements and loading at the Port of Nouakchott;
- a heliport and drilling office - both located at the existing international airport in a formerly disused terminal building;
- an operations office, a corporate office and cafeteria all located in central Nouakchott;
- accommodation for expatriate personnel; and
- a waste transfer station located south of Nouakchott and approximately 3km north of the old Port precinct.

2.2 PROJECT ACTIVITIES

2.2.1 Procurement

The total capital expenditure required for Project development has been reported as US\$750 million; nearly all of which will have been incurred by the end of 2005. Operational expenditure from 2006 onwards is estimated at around US\$80 to US\$90 million per year. Most of this expenditure occurs outside Mauritania. The local logistics and service procurement element of the overall procurement program was worth around US\$28 million to Mauritanian suppliers during 2003 and 2004. The local procurement program is expected to have peaked during 2005.

2.2.2 Employment and Training

Employment in Mauritania reached a peak of 1,500 in mid-2005 during the development phase. *Table 2.1* presents employment data and includes all Woodside employees working exclusively on the Project and those employed by Woodside contractors, eg. SoGeCo, MKT, Schenker and COMACOR. Of nearly 1,500 personnel working directly on the Project, two thirds were Mauritanian nationals. Under the terms of the PSC, Woodside has an obligation to give preference to Mauritanians for jobs and to build the skill and competency levels of Mauritanians to meet current and future job opportunities on the Project.

Table 2.1 Project Employment by Employment Type/Sectors and Number of Employees (peak employment as at mid-2005)

Employment Type / Sectors	Number of Employees
Admin	64
Management	16
Onshore	86
Offshore Drill	316
Port Operations	121
Drilling Sup	71
Hygiene / Security / Environment	27
Maintenance	39
Drivers	202
Watchmen	243
Catering / Service Staff	27
Mechanics / Electricians	39
Pilots / Stewards	-
Transit	33
Warehousing	17
Survey	-
Marine	0
Accommodation / Cleaners	48
Workers / Dockers	125
2005 Total	1488
2006 Projected Total	1388
2007 Projected Total	1413
Total	1488
- Mauritanian	1012
- Expatriates	476

Opportunities for increased localisation of the workforce have been identified in the following areas:

- Administration and secretarial;
- Human resources;
- Corporate affairs;
- Health, safety and environment (HSE);
- Finance, logistics, procurement, and cost engineering;
- Airport traffic;
- Shipping and port operations;
- Information technology;
- Security and transport;
- Operations management;
- Seismic personnel;
- Drilling - management, superintendents and engineers; and
- General maintenance.

In the early development phase, expatriates typically occupy the highly skilled positions. Offshore exploration jobs are exclusively carried out by a foreign workforce, about 60% of which are stationed offshore.

Currently, Woodside provides training programs covering: basic literacy; French and English language literacy; commercial office skills; driving (passenger cars to international standards); first aid; and security techniques. A small number of higher skilled Mauritians employed by Groupe Projet Chinguetti (GPC) receive training in the oil industry which includes internships at Woodside's corporate headquarters in Perth, Western Australia.

During the operational phase, employment is expected to be stable at around 1,300. Localisation and training plans are intended to progressively improve skills in the Mauritanian workforce and, over time, it is expected that nationals will fill more senior and complex roles. Local employment currently mainly falls into the following categories: drivers, security guards, port workers and accommodation services. It is estimated that 90% of the employment opportunities for nationals are positions with the JV's contractors.

2.2.3 Waste Management

Woodside developed a comprehensive waste management plan in late 2004 and has been implementing it since April 2005. Waste management practices currently in place include avoiding the creation of waste, segregation of recyclables, storage and partial treatment. The types of wastes generated by operations fall into two broad categories:

- domestic wastes - wastes resulting from the presence of a workforce; and
- industrial wastes – wastes arising from oil exploration and production activities.

During the exploration and the development phase to date, Woodside has managed waste without incident. Waste is periodically stockpiled at the Port and waste transfer station, prior to disposal in accordance with industry standards and international conventions (MARPOL). During the operation phase, additional wastes will be generated.

The waste transfer station is located in a beachside industrial area about 500m from El Mina, in south-western Nouakchott. The waste yard is operated by Project contractor Schenker and handles primarily urban wastes. At present, segregated urban wastes are incinerated in a shipping container converted into a temporary combustor. Oil-contaminated water is stored temporarily at the pipe yard at the Port before being transferred to a MARPOL registered facility overseas.

Construction of Nouakchott's first civic landfill site is due for completion in late 2005. The Project will use this or an adjacent facility as part of its waste management. Woodside is evaluating the specifications for a more efficient incinerator and longer term waste management strategies.

2.2.4

Transport

Project operations at the Port are of two types: (1) imports of exploration and construction equipment and (2) imports of supplies (mainly food and office consumables). The exploration and development activities have required supply vessels to make almost daily transfers to vessels offshore. In operation, the Floating Production Storage and Offtake Vessel (FPSO) will usually be supplied three to four times per week.

The movement of supplies to Nouakchott from the Port will involve a very small amount of additional road transport. A four wheel drive (4WD) car and driver pool system operating to ensure the safety of Woodside employees and contractors has made a minor contribution to Nouakchott's increasing volume of traffic. The pool vehicle fleet currently includes 39 vehicles however this is expected to reduce to approximately 30 over the next 12 months. These vehicles are estimated to generate between 400 and 500 additional short (less than 5km) journeys per day. Helicopter traffic (international airport to rig ships) is unlikely to exceed the current six movements per day.

3.1**INTRODUCTION**

SIA is a systematic process to examine potential socio-economic and health changes that a project may bring, and to develop management responses. A social impact assessment process should ensure that:

- social impacts are identified;
- opportunities for greater sustainability are identified;
- the findings are transparent;
- the process is as accountable and equitable as is realistically achievable; and
- findings are integrated with project decision making.

The assessment has considered routine, non-routine and cumulative impacts (where interactions between projects give rise to additional impacts). The social consequences of non-routine impacts would not normally be specifically considered in a social impact assessment for this type of project. They have been included here in recognition of the Project's strategic significance as Mauritania's first oil project and in response to stakeholder input.

In addition, there are a number of impacts which are indirect changes to the Mauritanian economy and society, the extent of which will be determined by public policy and management. The assessment distinguishes between direct project impacts for which leadership in implementation of mitigation measures rests with Woodside and those over which the Mauritanian Government has the greatest degree of control.

Figure 3.1 illustrates an overview of the SIA process for the Project. A key component has been the commitment to stakeholder participation.

The sections that follow describe the methodology for the SIA including the process of stakeholder participation.

Section		Consultation Activity	04	Year 2005				06
			Q4	Q1	Q2	Q3	Q4	Q1
3.2	Scoping	<div style="border: 1px solid black; background-color: #1a3d4d; color: white; padding: 5px; width: fit-content; margin: 0 auto;">Scoping (Terms of Reference)</div>						
			<ul style="list-style-type: none"> Issues workshops Information package on SIA process ToR Endorsement 					
3.3	Information Collection	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; background-color: #4f81bd; color: white; padding: 5px; width: 150px; height: 40px; margin-bottom: 10px;">Project Description</div> <div style="border: 1px solid black; background-color: #4f81bd; color: white; padding: 5px; width: 150px; height: 40px; margin-bottom: 10px;">Social Profile (baseline)</div> </div>						
			Meetings with PAPs and other stakeholders (SRG Meeting No. 1)					
3.5	Identification and Assessment of Impacts	Identify Impacts						
3.6		Evaluate Impacts						
3.7		Mitigate Impacts						
3.8		Classify Impacts (significance)						
	Communication / Reporting	SIA Report						
		Meetings with PAPs and other stakeholders (SRG Meeting No. 4)						

Completed
 Planned

Figure 3.1 Overview of a Generic SIA Process

3.2 SCOPING

3.2.1 Overview of Purpose and Process

The primary purpose of scoping was to determine the ToR that would guide the scope, extent and content of the SIA and prepare a Public Consultation and Disclosure Plan (PCDP) to provide a framework for stakeholder participation in the SIA.

The scoping phase commenced in September 2004 and culminated in workshops in March 2005 to review the Draft ToR.

A PCDP was made available to stakeholders in March 2005. The document was updated as unpublished working drafts between April and July 2005. It is reissued with this Draft SIA Report (refer *Annex F*) as a public record of outcomes of previous consultation and to describe future consultation required.

The SIA scoping phase set the parameters for the SIA through identifying:

- Project footprint (ie. areas occupied by the Project and likely to be directly impacted);
- potential indirect and cumulative impacts;
- potential duration of impacts (transitory or long-term);
- transboundary project aspects (ie. potential impacts on Senegal's northern coastline); and
- stakeholders potentially affected by the Project.

The process of scoping involved:

- conducting an analysis of stakeholders;
- review of available secondary data;
- identification of gaps in the existing baseline information on Mauritania and Senegal;
- assessment of the potential extent of Project influence (based on the Project aspects and activities); and
- undertaking consultation to test and refine the scope of the assessment.

These elements are described further below.

3.2.2

Stakeholder Identification and Analysis

Prior to commencement of stakeholder participation, it was necessary to identify potential stakeholders of relevance to the Project. This process was based on:

- stakeholders identified during the Chinguetti Project EIA and stored on Woodside's stakeholder database;
- ERM's previous work in southern Mauritania and Senegal, experience of similar projects internationally and the personal knowledge of Woodside's in-country staff; and
- a preliminary identification of project issues that in turn allowed the identification of potential stakeholders.

Additional groups and individuals were identified during introductory meetings with stakeholders, particularly NGOs and business representatives.

Stakeholders identified were categorised as either Project Affected Peoples (PAPs) or Other Stakeholder groups. PAPs are generally stakeholders that are likely to be directly affected by the Project. Other Stakeholders include those that could be indirectly affected through a regulatory duty, an interest, influence or secondary involvement in the Project.

PAPs identified in the SIA that may be affected by routine impacts included:

- Government authorities;
- Nouakchott's inhabitants;
- Local business and potential suppliers and contractors;
- Industrial and commercial fishing operators; and
- Vulnerable sub-groups (poverty affected, children, women, occupants of areas of informal settlements in Nouakchott, migrants, disadvantaged ethnic groups and sex workers).

Additional PAPs with the potential to be affected by non-routine impacts of the Project (such as an oil spill) were identified as:

- residents of coastal communities.

Other Stakeholder groups identified included:

- Mauritanian NGOs;
- international NGOs;
- IGOs;
- trade, industrial and professional organisations;

- financial institutions and banks;
- political parties and elected representatives; and
- other interest groups.

A further discussion of the PAPs is included in the PCDP (*Annex F*).

3.2.3 Consultation to Develop Draft Terms of Reference

Stakeholder engagement was conducted in November and December 2004 in Senegal and Mauritania to collect additional data and identify the main issues likely to be associated with the Project. A desktop assessment of potential project influence was then undertaken as a basis for preparation of the Draft ToR (refer to *Terms of Reference Development Report, Annex G*).

Information sessions on the SIA process were conducted for stakeholder groups in Dakar and Nouadhibou. These were part of workshops arranged to develop the Project's Environmental Management Plans (EMPs) for oil spill response planning. This allowed for integrated consideration of environmental and social issues.

The stakeholders consulted during the first SIA scoping mission are listed in the PCDP (refer *Annex F*).

It was considered to be more effective to defer scoping workshops on the key issues until stakeholders could be provided with additional information about the Project and the SIA process. An information package was subsequently prepared and issued to stakeholders in January 2005, and the scoping workshops were held in March 2005.

3.2.4 Verification of Terms of Reference

Stakeholder consultation was undertaken in Mauritania and Senegal between 15 and 22 March 2005 to present and discuss the Draft ToR and ensure that no important assessment issues had been missed.

Five workshops were conducted, including a plenary session in Nouakchott aimed at summarising the contribution of all of the workshops to the development of the ToR.

The input and feedback from the consultation held during March 2005 led to a number of changes to the ToR. A key outcome was the recognition of the benefits of an advisory committee with local Mauritanian stakeholders, chosen on the basis of their knowledge of the identified PAPs and issues relevant to the Project. This committee, called the Stakeholder Reference Group (SRG) facilitated validation of the data gathered and assisted in identifying any subtleties previously overlooked during the interpretation of

Geographic Scope

The geographic scope of the SIA will take into account:

- the entire territory of Mauritania, to study the consequences of the Project on the country's society and economy;
- Nouakchott, where the focus will be on the communities neighbouring the existing waste management facility and port, plus those with the most disadvantaged residents - considered most susceptible to socio-economic changes; and
- coastal areas in Mauritania and northern Senegal, in particular settlements located in the Parc National du Diawling, and on the Senegalese coast from Dakar to St Louis.

Oil spill modelling in the EIS indicates that in the worst case scenario of a catastrophic spill from the Project, the coast north of Nouakchott, including the southern areas of the Parc National du Banc d'Arguin (PNBA), have a higher probability of oil contact following a spill at the Chinguetti location in summer. The coastal areas of southern Mauritania and northern Senegal have a higher probability of oil contact in winter, while coastlines south of Dakar have an extremely low probability of oil contact.

Temporal Scope

The life of the Project is anticipated to be 8 to 10 years. This may be extended in the event of successful nearby discoveries or sustained high oil prices. For the purpose of this study, a project life of 10 to 15 years has been assumed.

Impact Type

The majority of direct and indirect **routine impacts** will be derived from the flow of oil revenue to the public sector, opportunities presented by Project procurement, and the likely attraction of migrants into Nouakchott. The **key non-routine impacts** are those arising from an oil spill, with significant negative implications for the industrial and artisanal fishing communities in Mauritania and Senegal and the artisanal fishing economies of both countries. Consideration is given to the consequences of marine pollution on livelihoods and health. **Cumulative impacts** can be anticipated from interaction with:

- completion of a road from Dakar to Casablanca linking Nouakchott and Nouadhibou;
- additional resource development projects; and
- foreign debt relief and forgiveness initiatives.

Sustainable Development

In addition to impact assessment, the ToR states the SIA should aim to identify potential opportunities to contribute to sustainable development. These may include capacity building, government training, procurement opportunities and technology transfer.

3.3 ***BASELINE COLLECTION***

The primary purpose of the baseline profile is to provide:

- a current state analysis;
- an understanding of the socio-economic characteristics that assists more effective communication with local stakeholders;
- the basis for identifying the likely interactions with the Project and potential impacts;
- information that will assist in identifying ways to contribute to sustainable development; and
- a basis for monitoring impacts.

Baseline data was initially drawn from existing and available literature. Data from the WB, Woodside's existing EIA documentation, country reports and various other sources were consulted to develop an initial socio-economic baseline for the SIA. This exercise focused on profiling Mauritania, parts of Senegal and in particular project-affected areas and vulnerable groups. Following the identification of data gaps, knowledge was supplemented by additional consultation and some primary data collection in coastal regions.

3.4 ***IMPACT ASSESSMENT AND EVALUATION***

The process of identifying, evaluating, mitigating, enhancing and classifying project impacts is the most systematic part of the SIA (*Figure 3.3*). Methodical and participative evaluation of impacts allows for constructive criticism of the analysis by stakeholders. Impacts are identified and evaluated before mitigations are then designed to avoid or minimise impacts to acceptable levels.

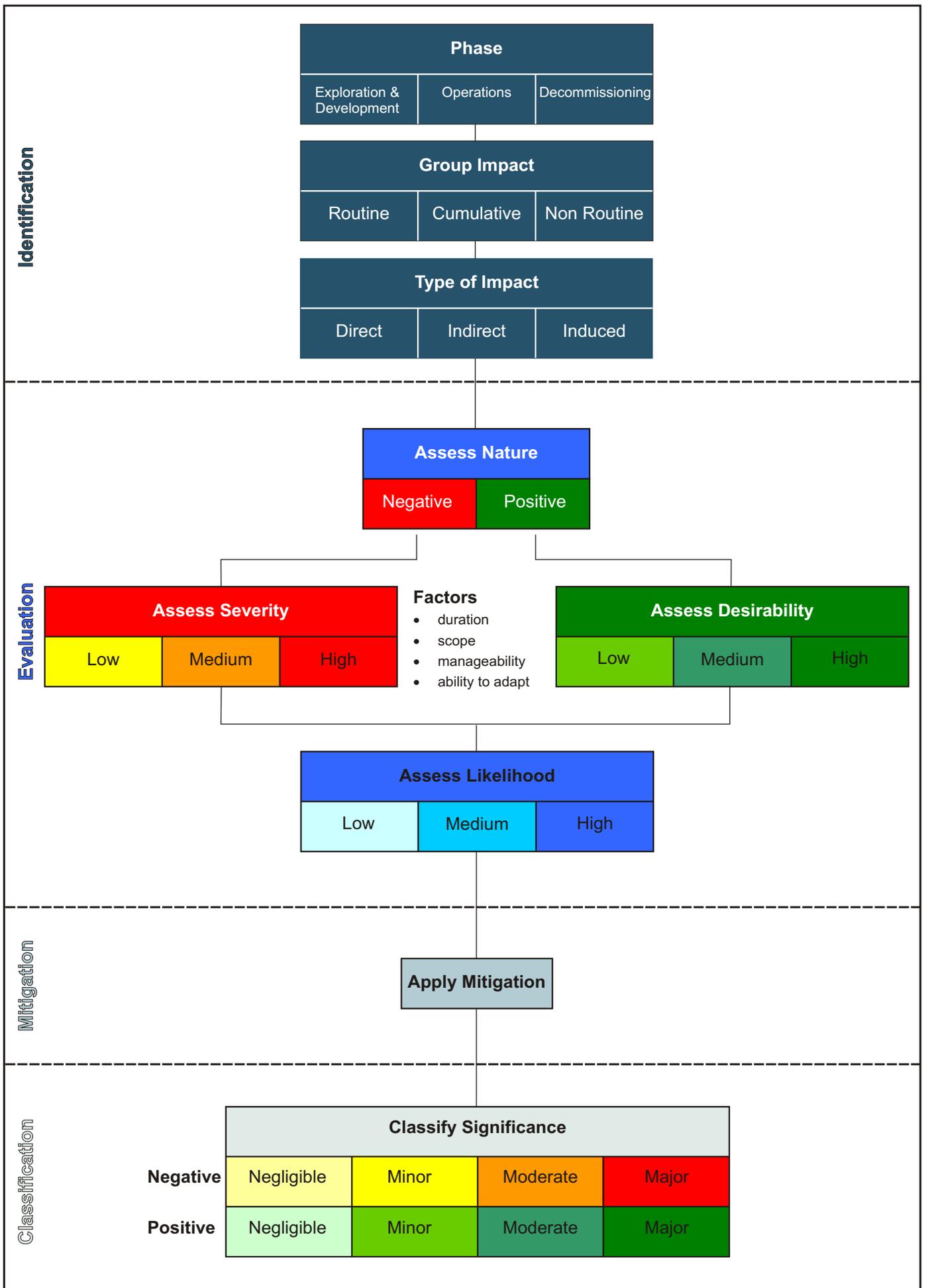


Figure 3.3 Impact Assessment Decision Making Flow Chart

Step 1 – Impact Identification

Impacts are identified by determining the interactions between aspects of the Project and peoples (or receptors) that may be affected by socio-economic changes. Aspects of a project are examined for each phase of the proposed activity - from planning to decommissioning through exploration, development, construction and operations.

This methodical approach to identification allows for greater clarity and is essential because impacts can vary enormously in nature:

- the same aspect of a project may cause a number of different impacts;
- the same aspect may give rise to both positive and negative impacts simultaneously;
- the same impact can have different consequences for one or more receptors;
- impacts can be caused directly by an aspect of the Project or indirectly through the consequent changes caused by an initial impact;
- as project-affected people react to the initial impact, additional (induced) impacts may be caused; and
- impacts can change as a project progresses through its phases.

For example, spending by Woodside Mauritania on goods and services may cause more people to be employed productively - a *direct* impact. The immediate suppliers of these goods and services place orders for inputs (eg. raw materials, new equipment) and the beneficiaries are suppliers of these inputs - an *indirect* impact. When employees (of Woodside, Woodside suppliers and the suppliers' suppliers) change their behaviour and spend more money, there is said to be an impact that is not caused directly by the Project but is *induced*.

Step 2 - Evaluation

Characterisation of project impacts requires assessment of a number of elements. Objective and context-specific descriptions of impacts guide this analysis. Factors considered include: duration, timing, reversibility, magnitude, area and intensity, the ability of the project-affected peoples to adapt to the change and significance of the change. The significance of social impacts cannot always be determined objectively and negotiation with stakeholders to make this determination is common.

Step 3 – Mitigation and Enhancement

Negative impacts are minimised and positive impacts optimised. For negative impacts, sequential approach to mitigation is to:

- (1) avoid Project activity;
- (2) create barriers to reduce the threat of the impact; and
- (3) create barriers to prevent escalation of the effects of the impact.

For positive impacts, it is often possible to develop mechanisms to enhance the desirable impacts. This will require leadership, intensive management and the formation of strategies involving multiple stakeholder groups.

Step 4 – Classification

The mitigated impact is re-evaluated against the objective criteria developed for the Project. The acceptability of any residual impacts is determined and monitoring measures developed in a Social Impact Management Plan (SIMP).

3.5

SOCIAL IMPACT MANAGEMENT PLAN (SIMP)

The SIA acknowledges the prior existence of JV strategies and structures aimed at contributing to sustainable development in Mauritania. These include the Environmental Management Plan framework, the Communications and Stakeholder Engagement Plan, Oil Spill Contingency Plan, Fisheries Interaction Management Plan, Waste Management Plan, HSE Plan, localisation and training plans, and JV willingness to invest in social responsibility projects. The plans and strategies of the Government of Mauritania are also relevant to the design of the SIMP. An outline of the SIMP forms Chapter 6. The purpose of this SIMP is to:

- establish primary management objectives;
- set out an example of critical success factors and performance measures for discussion with stakeholders:
 - key performance indicators – including inputs and outputs (efficiency) measures and mitigation (outcome) measures; and
 - relevance to whole community initiatives.
- set out a monitoring program for continuous improvement of the action plan;
- make timed commitments for disclosure and reporting; and
- delineate roles and responsibilities including the membership and responsibilities of any monitoring body.

Consultation

This framework has been developed based on best-practice guidelines and the particular context of the Project. A public comment period will provide an opportunity for feedback and workshops planned for January 2006 will provide stakeholders with the opportunity to discuss proposed mitigation measures in detail.

4 BASELINE PROFILE

4.1 BASELINE PREPARATION APPROACH

4.1.1 Overview

The baseline profile prepared for this SIA reflects the scope identified in Chapter 3 in that there are three key areas of interest: Mauritania (the national geographical scale), the city and environs of Nouakchott and the coastal communities (from Nouadhibou in northern Mauritania south to Dakar in northern Senegal). *Table 4.1* summarises the content of the baseline section. Detailed profile information is included in *Annex D1 to D3*.

Table 4.1 *Baseline Content Summary*

	<i>National</i>	<i>Nouakchott</i>	<i>Coastal Communities</i>
Geographical and demography	✓	✓	✓
Political context	✓		
Administrative arrangements	✓	✓	✓
Economy:	✓		
- Performance	✓		
- GDP	✓		
- Economic Structure	✓		
- Economic Sectors	✓	✓	✓
- Banking	✓		
- Inflation and Exchange Rates	✓	✓	
- Employment	✓	✓	✓
- Investment and Savings	✓		
- External Sector ⁷	✓		✓
- Public Finances	✓		
Infrastructure	✓	✓	✓
Poverty	✓	✓	
Health System and Conditions	✓	✓	✓
Education	✓	✓	✓
Housing and Land Markets		✓	

4.1.2 Baseline Research

Following the development of a preliminary SIA baseline using secondary data, a gap analysis was completed to identify the basis of a scope of work for sub-consultants in Mauritania and Senegal. In Mauritania, the baseline data was compiled by the ONS and Tenmiya (a not-for-profit consultancy) with the bulk of this statistical work undertaken by ONS. Mauritania 2000

⁽⁷⁾ External Sector includes trade, Official Development Assistance and debt.

provided valuable information on the characteristics of the coastal communities north of Nouakchott. In Senegal, the baseline data was collected by the Department of Statistics and Demography from the National School of Applied Economics.

4.1.3 Limitations and Qualifications

Development of the baseline profile for Mauritania, Nouakchott and the coastal communities recognises that the planning and development phases of the Project are almost complete.

Where data is available, a distinction has been made in the Project baseline between current conditions and those that would have been the case without the Project's exploration and development phase.

The limitations of data availability restrict the quantitative nature of the subsequent assessment and are most acute for the national cultural context, the nature of the Nouakchott economy, the basic socio-demographics for coastal areas, and artisanal coastal fishing activity. Specific limitations are noted throughout the detailed baseline reports (*Annexes D1 to D3*). A complicating factor in evaluating data validity was the significant change taking place in Mauritania as a result of recent droughts, the effects of macro-economic policy settings (in particular, off-budget spending), and other projects including the new Dakar to Nouadhibou section of the main north-south road.

4.2 NATIONAL PROFILE: MAURITANIA

4.2.1 Statistical Snapshot: Mauritania

Mauritania is culturally rich and diverse but material standards of living are poor. A statistical snapshot of Mauritania is presented in *Table 4.2*.

Table 4.2 Mauritania in 2004: A Statistical Snapshot⁽⁸⁾

Descriptor	Unit Measurement
Population	2,980,357
Population density	2.8 per km ²
GNI per capita	\$430 per capita (2002) ⁹
UNDP development index	152 out of 177 nations

⁽⁸⁾ UN Statistical Division, Sep 2005 (data range to 2004)

⁽⁹⁾ World Development Indicators 2005

4.2.2 ***Society***

The Northern region of Mauritania is the home of the nomadic Arabic-speaking (Hassaniya) Maurs. Though culturally homogeneous, the Maurs are divided among numerous tribal groups and are broadly distinguished as white (Beydane) or black (Haratine). In the southern regions, there are three main ethnic/language groups of Black Africans: Halpulaar, Wolof, and Soninke.

Mauritanian society is complex. According to a US State Department report, conflict among White Maur, Black Maur, and Black African Mauritanian groups, centring on language, land tenure, and other issues, continues to be a major challenge to national unity⁽¹⁰⁾.

4.2.3 ***National Economy***

Economic Performance

Since 1992, the Government has pursued a series of macroeconomic and structural reforms that have stimulated sustained economic growth, stabilised public finances and reduced the role of the state in the economy. The private sector has grown as a result. *Box 4.1* gives a summary of these reforms. In 2003 to 2004, progress in structural reforms was partially disrupted as result of a severe drought and an attempted coup in 2003. This distorted the usually relatively good macroeconomic management with major fiscal, monetary, and exchange rate management weaknesses surfacing.

⁽¹⁰⁾ US State Department country profile <http://www.state.gov/r/pa/ei/bgn/5467.htm> accessed November 2005

1993 to 1997

- Fisheries: The fishing marketing board and sectoral public enterprises were privatised. A license system for industrial fishing was implemented. Fishing activities opened up to foreign operators. A system of territorial rights for artisanal fisheries was implemented.
- Mining: Société Nationale Industrielle et Minière (SNIM) was successfully restructured.
- Banking: All commercial banks were privatised. A new banking law was enacted. A market for treasury bills was created. Regulation of savings and loan associations was adopted, as was a framework for micro-finance. The foundation for stronger banking sector supervision was established.
- Public Enterprises: All public enterprises, except for SNIM, were liquidated or privatised; subsidies, tax exemptions and cross-debts were eliminated.
- Private Sector: Measures to promote private sector development in banking, foreign exchange, tariffs, pricing, and marketing were put in place. The Government of Mauritania withdrew from all commercial and industrial activities; state monopolies were abolished; the Chamber of Commerce was reinvigorated; and regulation pertaining to the creation of economic interest groups (EIGs) was adopted.

1998 to 2002

- Governance: The National Audit Office was strengthened. A new procurement code was adopted. The tax directorate was reorganized and the customs administration was strengthened. An expenditure clearing law was adopted. The Government began publishing quarterly reports tracking poverty-related expenditures.
- Rural: Achievements in the rural sector included full liberalisation of pricing and marketing; privatising of rice mills land tenure reform implemented and monitored in the Trarza region and in the entire middle and upper Senegal River Valley; strengthening of a cooperative credit system; privatising of veterinary services; and adoption of a livestock development code.
- Energy: The electricity company (SOMELEC) was in the process of being privatised.
- Mining: The mining sector opened to private investment. A new mining code was adopted.
- Telecommunications: Telecommunications and postal services laws were adopted. Postal and telecom activities separated. Competition was introduced in telecom services and the state operator was privatised.
- Fiscal: Tariff, VAT, and direct taxation reform was implemented; a new investment code was adopted; MTEFs for health and education infrastructure and urban sectors were prepared; a new budget nomenclature was implemented; and computerisation of the entire expenditure chain was initiated.

Adapted from the WB Country Economic Memorandum, 2004.

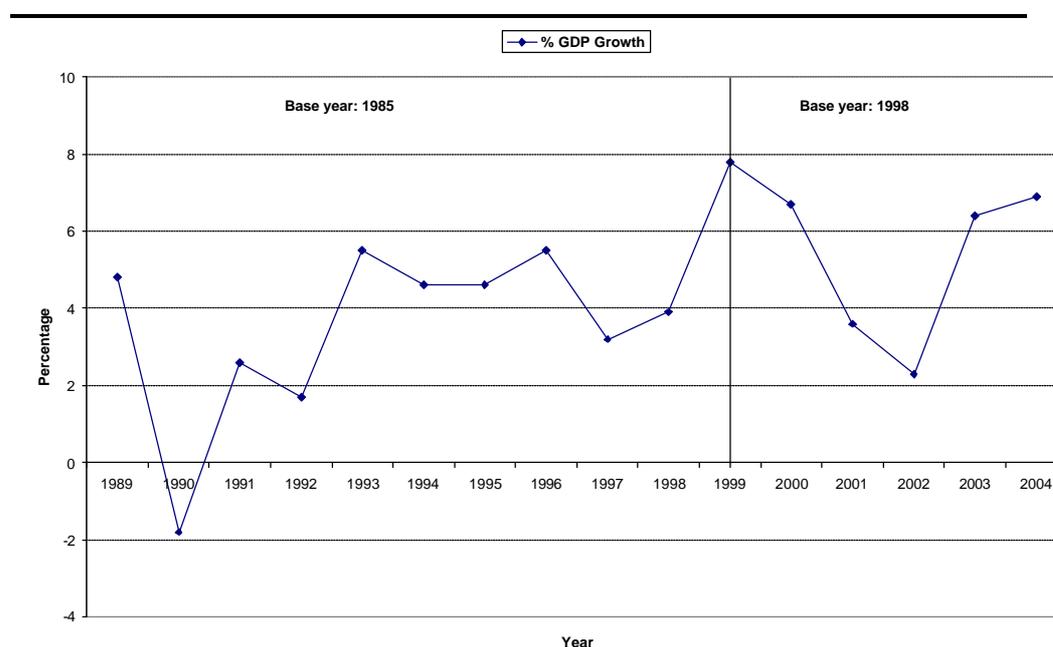
Growth in Gross Domestic Product

Figure 4.1 presents the percentage of real gross domestic product (GDP) growth between 1989 and 2004⁽¹¹⁾. The effect of reforms on growth is clear: on average, real GDP growth has increased from an average of 0.8% during the period 1990 to 1992 to an average of 4.5% for the period 1993 to 1998. Between the years 1999 and 2004, using 1998 as the new base year, average growth in real GDP has been around 5.6%.

⁽¹¹⁾ Figures for the years to 1998 are at constant 1985 prices, whereas figures from 1998 are at 1998 constant prices. IMF data, released for public consumption in 2003, only goes up to 2002. An update has been drafted but not yet released by the Mauritanian Government. In the draft compilation, the data has been revised substantially, taking into account a new base year, 1998. In addition there has been an attempt to value the large informal sector and include it as part of the national accounts.

GDP growth peaked at 7.8% in 1999, partly as a result of good performance in the manufacturing and construction sectors.

Figure 4.1 *Mauritania: Percentage Real GDP Growth, 1989 to 2004*



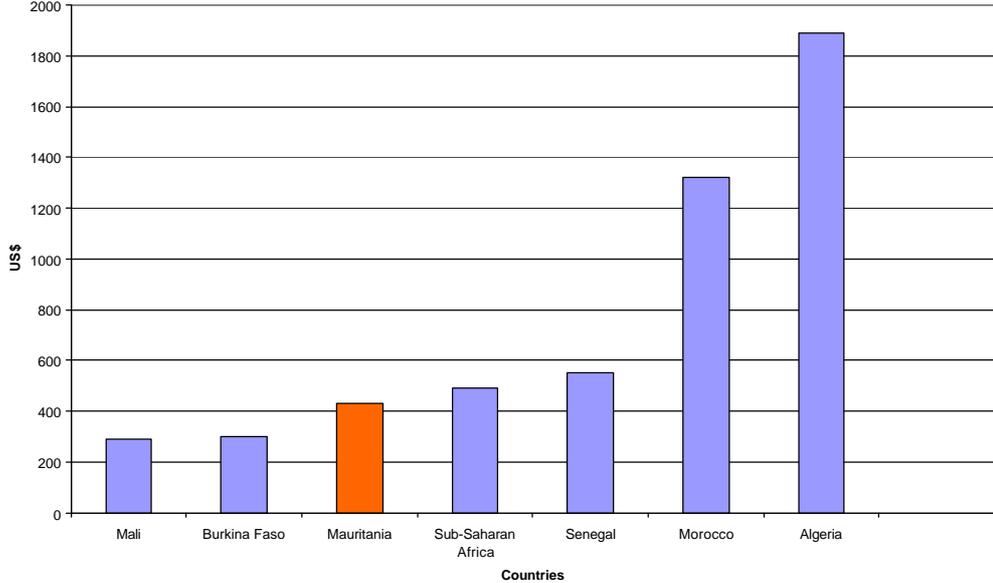
Source: *Islamic Republic of Mauritania: Statistical Appendix, IMF 2003; IMF Country Data 2005; and World Bank. 2004. "Project Performance Assessment Report No. 29615*

In 2001 and 2002, real GDP growth slowed to 3.6% and 2.3% respectively due to a decline in output in the mining sector as a result of reduced demand for iron ore in Europe. This was compounded by a substantial decline in agricultural output owing to the effects of a severe drought which caused a state of famine in the southern agricultural regions. Despite these factors, growth still managed to be positive as the decline in mining and agriculture were offset by the boom in construction, transport and telecommunication and services sectors.

Real GDP growth has rebounded in 2003 and 2004 to grow at a rate of over 6% per year as a result of the increased Government spending (on food, to alleviate the shortages caused by the drought, and on security) and stronger growth in the construction and manufacturing sectors in 2004.

Figure 4.2 compares per capita income for Mauritania with its regional neighbours. Mauritania's per capita income is below the average for sub-Saharan Africa.

Figure 4.2 *Gross National Income (GNI) Per Capita Income (Atlas Method), 2003*



Source: World Development Report 2005

Whilst the volatility of growth has decreased, the economy retains many structural weaknesses, particularly a high (albeit declining) dependence on natural resources. This makes it highly vulnerable to exogenous shocks such as variation in rainfall patterns, locust invasions, fluctuation in commodity prices, changes in demand for its products on the world markets and the exhaustion of natural resources.

Growth in Economic Sectors

Table 4.3 depicts the growth of output by sector, between 1998 and 2004. It is clear from the table that the largest and most consistent increases in output have come from the construction and public works and the transport and telecommunication sectors.

Growth from the services and manufacturing sectors has also strong and it is clear that these sectors have been the drivers of growth for the economy in the past few years. This indicates that the economy is gradually diversifying from a restricted natural resource base.

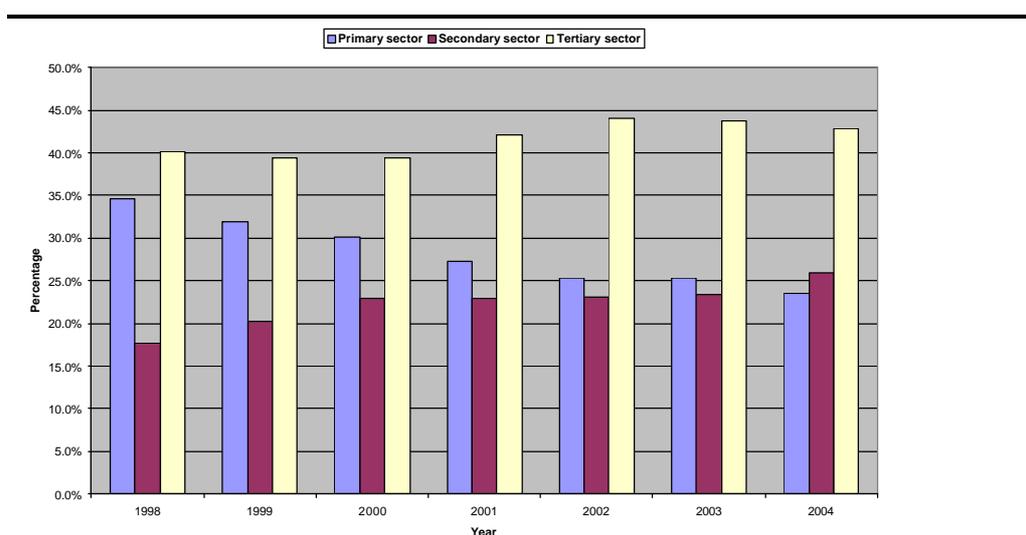
Table 4.3 *Mauritania: Rate of Growth in Output by Sector, 1999 to 2004*

Sector	1999	2000	2001	2002	2003	2004
Rural Sector	3.0%	-0.5%	-3.8%	-3.3%	6.5%	-3.3%
Agriculture	2.3%	-12.2%	12.2%	-19.4%	29.9%	-27.8%
Livestock	3.2%	3.7%	-1.2%	1.0%	1.5%	3.5%
Mining	-5.7%	3.3%	-10.5%	-7.5%	6.3%	3.4%
Manufacturing	26.7%	18.5%	-3.5%	-1.7%	3.3%	19.9%
Fishing	16.5%	8.8%	12.1%	-3.7%	-8.2%	4.6%
Other manufacturing	32.3%	-8.7%	-13.4%	0.1%	7.1%	9.2%
Construction and public works	17.5%	25.4%	20.8%	14.6%	15.1%	16.2%
Transports and telecommunications	-1.2%	20.1%	13.8%	29.5%	4.8%	6.9%
Commerce, restaurants, hotels	-1.4%	3.8%	7.4%	2.0%	5.2%	4.8%
Services	8.0%	5.6%	24.8%	5.4%	6.5%	5.1%
Public Administration	12.6%	5.3%	5.5%	5.1%	5.0%	4.0%

Source: *Islamic Republic of Mauritania: Statistical Appendix. IMF 2005 (unpublished)*

Over the past few years, the tertiary sector (consisting of commerce, transport and communications, public administration and other services) has increased in importance to the Mauritanian economy. As *Figure 4.3* shows, the sector now accounts for 42.9% of GDP in 2004. The increase in the share of overall output has been driven by expansion in the transport and communications and construction sub-sectors, helped by the ongoing privatisations and the on-going construction boom.

Figure 4.3 *Mauritania: Percentage Share of GDP by Primary, Secondary and Tertiary Sectors, 1998 to 2004*



Source: *Islamic Republic of Mauritania: Statistical Appendix. IMF 2005 (unpublished)*

The primary sector (consisting of agriculture, livestock and mining⁽¹²⁾) has seen its share of GDP gradually decline from 34.6% to 23.5%, between 1998 and 2004. This has been mainly a due to adverse climatic conditions (droughts) that have affected crops and livestock in the main agricultural regions in the south and the east of the county.

The share from the mining sector has also fallen from 14.4% in 1998 to 9.2% in 2004. This has been due to fall in world iron ore prices in 1999 that reduced production and decreased the value of iron exports for Mauritania. Production volumes fell from 11.4 million tonnes in 1998 to 10.5 million tonnes in 2002 and the unit price per metric ton also fell from US\$19 million in 1998 to US\$17.6 million in 2002.

Société Nationale Industrielle et Minière (SNIM), the national mining company, currently has substantial Chinese contracts and expects production and shipments to increase. However, SNIM is constrained by the current production capacity of around 13 million tonnes per year. The Port of Nouadhibou is currently undergoing a €50 million modernisation program that involves the enlarging of quays, improvement of services, competitiveness and hygiene. This is expected to ease demands on the port's capacity resulting from increased production and shipments of iron ore.

The share of GDP of the secondary sector (consisting of fishing, manufacturing and construction) has increased from 17.7% in 1998 to 25.9% in 2004. However, this hides sub-sectoral variations: both the fishing and construction sub-sectors have increased their share over this period, whereas the share from manufacturing has fallen slightly.

While the Government of Mauritania has acknowledged the need for a diversified economy and has made efforts towards this; the levels of diversification are still extremely low. *Table 4.4* presents the share of GDP between 1998 to 2004, by sub-sectors.

⁽¹²⁾ Fishing has no longer been classified as a primary sector in the revised output data. It now wholly comes under the manufacturing sector and therefore the secondary sector

Table 4.4 Mauritania: Percentage Share of GDP by Sub-Sector, 1998 to 2004

Sector	Sub-sector	1998	1999	2000	2001	2004	2003	2004
Primary Sector	Agriculture	5.4%	5.1%	4.2%	3.6%	2.8%	3.4%	2.3%
	Livestock	14.8%	14.2%	13.8%	13.2%	13.0%	12.4%	12.0%
	Mining	14.4%	12.6%	12.2%	10.6%	9.5%	9.5%	9.2%
Secondary Sector	Fishing	4.5%	4.9%	8.0%	8.3%	7.8%	7.3%	8.9%
	Other Manufacturing	8.2%	10.0%	8.6%	7.2%	7.0%	7.1%	7.2%
	Construction and public works	5.0%	5.4%	6.4%	7.5%	8.3%	9.0%	9.8%
Tertiary Sector	Commerce and other services	12.3%	11.3%	11.0%	11.4%	11.3%	11.2%	11.0%
	Transport and communications	4.4%	4.0%	4.6%	5.0%	6.3%	6.2%	6.2%
	Other services	8.2%	8.2%	8.1%	9.8%	10.1%	10.1%	9.9%
	Public Administration	15.2%	15.9%	15.7%	15.9%	16.4%	16.2%	15.7%

Source: Islamic Republic of Mauritania: Statistical Appendix. IMF 2005 (unpublished)

Banking System

The banking and financial system in Mauritania is regulated by the Banque Central du Mauritania (BCM). It has under gone several rounds of restructuring, with the aim of mobilising and recycling savings for investment purposes. The Government of Mauritania has divested its shareholding in all but one commercial bank. Liberalisation of the sector has introduced competition with the establishment of new commercial banks using private capital. Credit to the private sector has also increased from 11% in 1997 to 1998 to nearly 20% during 1999 to 2001. Other changes that have been implemented include:

- the removal of the requirement to surrender export receipts;
- reduction of discretionary action by the BCM on foreign exchange markets; and
- removal of the requirements to remit foreign exchange.

Despite these and others changes, the sector still remains highly oligopolistic in nature and has a high degree of non-performing loans concentrated in a few problem sectors. The banking sector is also hampered by the high percentage of the commercial banking sector's deposit base being made up of Government funds, with few incentives to attract private deposits. In addition, the cost of obtaining credit is very high and access is difficult.

Inflation

Until 2002, despite the devaluations of the Mauritanian Ouguiya (UM) and removal of price controls, inflation was kept in check through a tight monetary policy that has reduced the expansion of money supply. As *Figure 4.4* shows, increases in the Consumer Price Index (CPI) have stood at less than 5%, except for 1998 when it reached 8% (as a result of a 30% rise in clothing prices). Based on recent figures, the CPI inflation remained at around 5.5% on average, in 2003. However in 2004, it increased to about 10.4% by year-end, reflecting the delayed effect of the fiscal and monetary expansions resulting from the cost of programs aimed at alleviating the drought, addressing security concerns and upward adjustments in the retail prices of petroleum products. Inflation is expected to continue to increase in 2005 to around 15%.

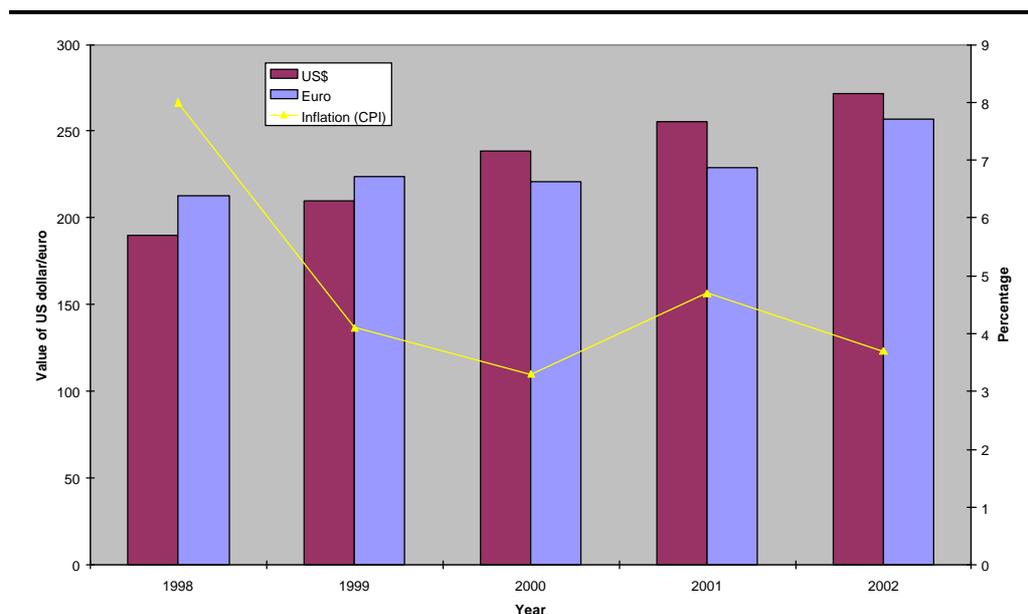
Exchange Rates

The reforms introduced under the guidance of the International Monetary Fund (IMF) have resulted in removal of exchange controls and the value of the Ouguiya is now nominally determined by the market (it is still subject to periodic interventions by the BCM). Since 1993, the Ouguiya has fallen against the dollar, as a result of devaluations or depreciation of the currency (refer *Figure 4.4*). In recent years it has stabilised around 260 UM to US\$1. The value of the Ouguiya against the euro has also fallen in recent years, partly as a result of the weakness of the US dollar against the euro.

In addition to the official currency markets, there also exists a parallel black market. The parallel market premium over the official exchange rate increased in 2003 and peaked at above 20% in May 2004⁽¹³⁾.

⁽¹³⁾ IMF Release, 2005

Figure 4.4 Mauritania: Inflation and Exchange Rates (US dollar and euro), 1998 to 2002



Source: EIU: Mauritania Country Report, 2004 and Islamic Republic of Mauritania: Statistical Appendix. IMF 2003

Investment and Savings

Investment as a share of GDP increased from an average of 18.6% over the period 1995 to 1998 to an average of 24% during 1999 and 2002⁽¹⁴⁾. These increases came from a rise in public investment that accompanied the implementation of the Poverty Reduction Strategy Paper (PRSP), ongoing expansion in mining capacity, and a large influx of foreign direct investment in the recently liberalised telecommunications industry. Much of this investment was equalled by rising domestic savings. Gross domestic savings rose from 17% of GDP between 1995 and 1998 to an average of 26% during 1999 and 2002⁽¹⁵⁾.

The External Sector

Trade

The majority of Mauritania's exports consist of two commodities: iron ore and fish. These accounted for nearly 99% of the total value of exports in 2002, estimated at US\$330.3 million, with fisheries accounting for US\$143.5 million and iron ore for US\$183.8 million (refer Table 4.5). About 80% of exports go to industrial countries: exports of iron ore mainly to European countries, whereas fish exports go to Asia and the former Soviet Bloc.

⁽¹⁴⁾ (Tenmiya/ONS Economic Baseline for Chinguetti Project, 2005)

Despite the stated intentions of the Government of Mauritania, there has been very little export diversification to date to reduce the dependency of exports on the two primary commodities.

Mauritania is heavily dependent on imports for most of its internal needs, given its erratic climatic conditions, a narrow production base and low levels of industrialisation. In 2001, petroleum products represented about 25% of total imports, followed by food at around 16.5% and construction materials at 9%. Imports of oil related machinery and equipment started appearing in the balance of payments accounts from 1999 onwards. In 2001, they consisted just over 4% of total imports. The rest of the imports consisted of other transport, equipment and basic manufactures.

It is clear from *Table 4.5* that the dependence on two primary commodities for exports exposes the Mauritanian economy to both price fluctuations and changes in demand for its products on world markets. This has resulted in large fluctuations in export revenues earned and when combined with the volatility of petroleum prices on the imports side, translates into frequent changes in the country's external trade balance.

Payments related to leasing of oil platforms during the oil exploration stages accounted for nearly US\$88 million of the total debits in the current account. These were offset by the direct foreign investment of nearly US\$110 million in 2002, brought in by the oil companies for the purpose of exploration activities.

Table 4.5 *Mauritania: Trade (Exports and Imports, millions of US\$), 1998 to 2002*

Trade	1998	1999	2000	2001	2002
Total Exports	359.7	333.1	344.7	338.6	330.3
Exports: Fish	140.6	154.8	149.1	156.9	143.5
Exports: Iron ore	217	177.1	194.1	178.5	183.8
Exports: Other	2.1	1.2	1.5	3.2	3
Total Imports	357.9	310.5	336.2	372.3	418
Imports: Petroleum products	49.5	61	99.4	94.5	107.6
Imports: Oil related machinery and equipment	0	2.9	6.7	15.6	22
Imports: Other (food stuff, basic manufactures)	308.4	246.6	230.1	262.2	288.4
Trade balance	1.8	22.6	8.5	-33.7	-87.7

Source: Islamic Republic of Mauritania: Statistical Appendix. IMF 2003

The current account deficit (excluding oil and other foreign direct investment related imports) rose in 2003 and 2004 to around 16% of GDP for the two years. Including grants, the external current account balance recorded a large surplus in 2002, largely due to the late receipt of EU fishing license payments (for 2001 and 2002). In 2004, the current account deficit (excluding oil and other foreign direct investment related imports) rose in 2003 and 2004

⁽¹⁵⁾ (Tenmiya/ONS Economic Baseline for Chinguetti Project, 2005).

to around 16% of GDP for the two years. This reflects the large increases in Government imports in 2003 and 2004, related to the drought (food requirements) and increases in international petroleum prices in 2004.

Gross official reserves stood at US\$400 million as of the end of 2002. This represented 8.7 months of imports of goods and non-factor services. In 2003 and 2004, as a result of the extra-budgetary spending and the large increases in Government imports, the reserves were driven down substantially.

Official Development Assistance

Net Official Development Assistance (ODA) consisting of grants and concessional loans has increased from US\$118.9 million in 1998 to US\$305.7 million in 2002. When the first PRSP was developed, the total cost of implementing the programs was estimated a US\$475 million. A large part of this cost is expected to be covered by ODA funds and funds released via the Highly Indebted Poor Countries (HIPC) debt relief initiative. In addition, the ODA funds flowing into economy have been important in maintaining the balance of payments.

Debt

Mauritania's total external debt stands at US\$2.31 billion in 2002, equivalent to 241.6% of GDP, after peaking in 1999. The majority of the debt is public or publicly guaranteed long-term debt. In the years leading up to Mauritania's completion point under the IMF-WB HIPC debt relief initiative in June 2002, total debt servicing levels have fallen substantially. In 1998 they stood at US\$110 million, falling to US\$64 million in 2002. Therefore, debt service ratios (as a percentage of exports of goods) after debt relief have been reduced from 23.7% in 1998 to of 19.4% in 2002.

Under the enhanced HIPC Initiative Mauritania's total debt service relief will amount to approximately US\$1.1 billion over time. As a result, the net present value of Mauritania's total external debt has been cut by nearly 50%, providing a good basis for long-term debt sustainability.

Resources freed up by debt relief, under the HIPC Initiative are being allocated to fund key poverty reduction programs, as set out in Mauritania's PRSP.

Public Finances

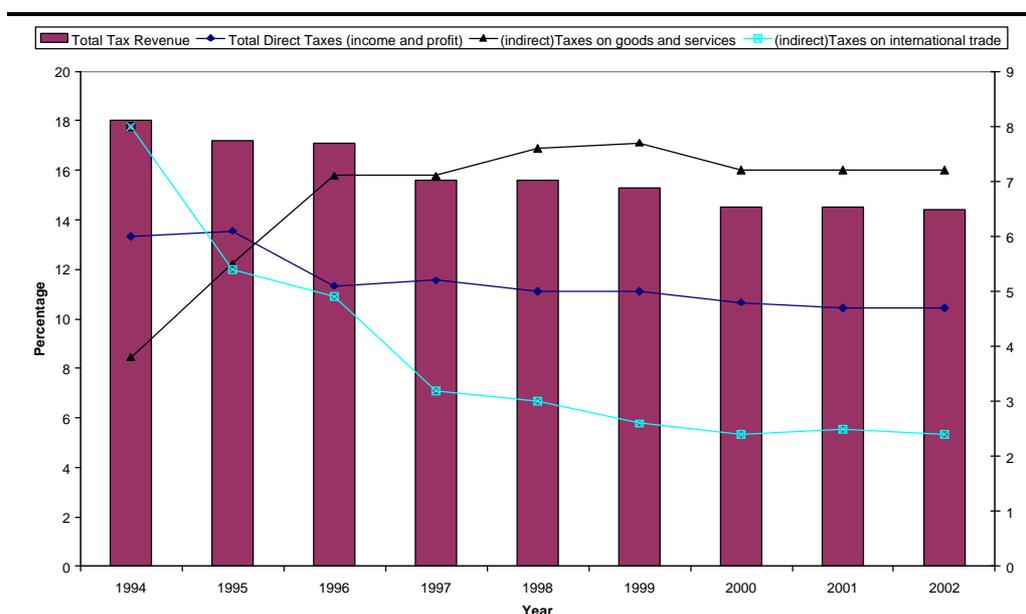
Budgetary Revenues

The Government has implemented substantial fiscal reforms to improve revenue performance, diversify and simplify the tax system and broaden the tax base. This has helped strengthen Mauritania's public finances.

As Figure 4.5 shows, fiscal pressure (tax revenue as percentage of GDP) has gradually declined from around 18% in 1994 to 14.3% in 2002. Direct taxes (on income and profits) have also marginally declined from 5.8% of GDP to 4.5%, as a result of the reduction in rates of the corporate income tax.

So far, the biggest adjustments from the tax reforms come from the indirect tax system. The percentage of tax revenues from international trade taxes has declined substantially, as a result of tariff reforms undertaken in the 1990's. This fall has been compensated by the introduction in 1995 of a tax on goods and services (VAT), replacing several indirect taxes. The tax on goods and services as a percentage of GDP has increased from 3.7% to 7.2%.

Figure 4.5 *Mauritania: Tax Revenues as a Percentage of GDP, 1994 to 2002*



Source: World Bank. 2004. "Mauritania: Country Economic Memorandum"

Non-tax revenues have increased from just 4.9% in 1994 to 23.1% in 2002. This is primarily as a result of EU fish royalties. A framework agreement between Mauritania and the EU signed in 1996 and renewed in 2001, replaced deep sea port licenses with access fees. The European Union (EU) agreement is to be re-negotiated in 2006.

Table 4.6 presents key items of public finances from 1994 to 2002, as a percentage of GDP⁽¹⁶⁾.

⁽¹⁶⁾ Total revenues and non-tax revenue figures are distorted for 2001 and 2002 by the late payment of the EU fishing royalties.

Table 4.6 Mauritania: Public Finance (as a Percentage of GDP) , 1994 to 2002

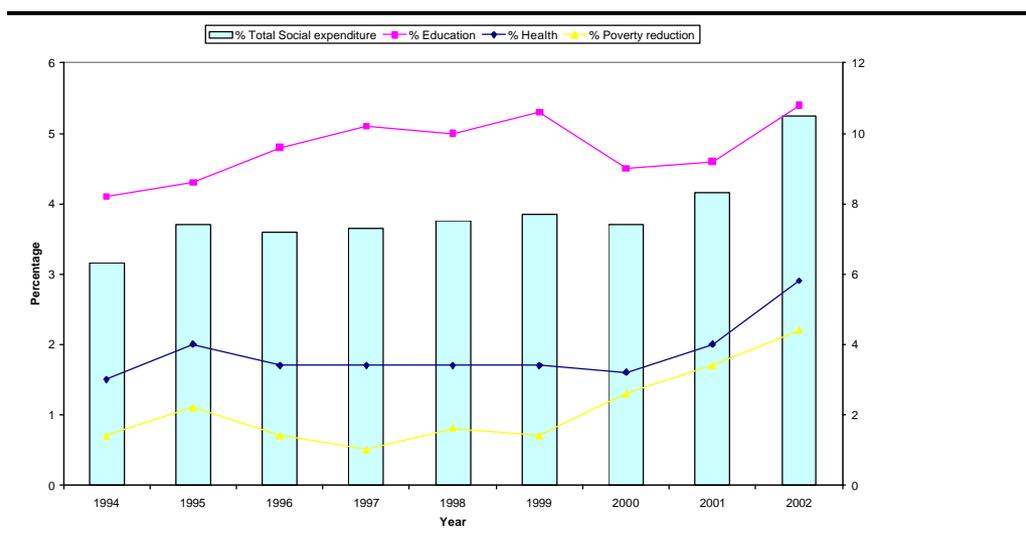
Budgetary Item	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total Revenue	23.3	24.1	29.2	26.4	26.4	26.8	25.3	20.6	37.5
Tax Revenue	18	17.2	17.1	15.6	15.6	15.3	14.5	14.5	14.4
Non-tax Revenue	4.9	6.6	11.9	10.6	10.6	11.3	10.7	6.1	23.1
Total Expenditure	27.7	24.8	24	22.7	24.8	25.3	30.3	26.2	31.4
Current									
Expenditure	18	17.8	17.1	16.6	17.3	17.9	17.7	16.9	19.5
Capital expenditure	9.1	6.8	6.7	5.8	7.3	7.4	12.6	9.3	11.9
Balance -Surplus/ Deficit	-4.4	-0.7	5.2	3.7	1.6	1.5	-5	-5.6	6.1

Source: World Bank. 2004. "Mauritania: Country Economic Memorandum"

Budgetary Expenditures

The most recent official figures show that in the five years to 2002, the annual average Government expenditure was US\$239 million and overall public expenditures have increased to 31.4% of GDP in 2002. A large part of this increase comes from capital expenditures as a result of financing infrastructure programs and cash advances to Mauritel to improve its finances before privatisation. Current expenditures have risen relatively slowly, with a fall in military spending to 2002. Figure 4.6 shows allocations to social sectors (health, education and water and sanitation and poverty reduction programs) have increased from an average of around 7% to 8.3% and 10.5% for 2001 and 2002, respectively. When the total social expenditures are separated by sectors, a similar trend can be seen. This is as a result of these social sectors being identified as priority sectors in the first PRSP finalised in 2000.

Figure 4.6 Mauritania: Social Spending on Education, Health and Poverty Reduction Programs as a Percentage of GDP, 1994 to 2002



Source: World Bank. 2004. "Mauritania: Country Economic Memorandum" and World Bank. 2004. "Project Performance Assessment Report No. 29615."

Budgetary Balance

As a result of improved control of public expenditure and domestic revenue collection, a budget deficit in 1994 and 1995 was converted into a surplus in the years to 2000. In 2000, the deficit returned as expenditure increased. The deficit further deteriorated to 5.5% of GDP in 2001 due to the late payment of the 2001 fish license. When the payment was made in 2002, this resulted in a fiscal surplus of 6.2%.

In 2003 and 2004, the Government implemented an emergency plan to alleviate the effects of the acute 2002 drought and for other security-related expenditures. These were financed in part through extra-budgetary spending by expanding the monetary supply (effectively printing money) and a drawdown of official foreign reserves. This has resulted in a large fiscal deficit of around 30% and 20% of annual GDP for 2003 and 2004 respectively.

4.2.4

Human Capital

Data on employment in Mauritania is not collected on a routine basis. The most up-to-date information comes from the 2000 population census and therefore supports, at best, only a rough estimate. Employment is dominated by the informal sector and agriculture (concentrated along the Senegal River and in the regional centres of Rosso and Kaedi). Although a relatively small contributor to GDP growth, the agriculture and livestock sector is very important for employment, income generation and poverty reduction.

Most employment is low-skilled with small pockets of highly-skilled Mauritanian nationals and expatriate workers – mostly in Nouakchott and Nouadhibou. Officially, Nouakchott accounts for 25% of national employment⁽¹⁷⁾.

One of the key limitations to reducing poverty is the lack of qualified teachers. Despite the number of teachers doubling for both primary and secondary schools between 1994 and 2003⁽¹⁸⁾, the number of teachers per pupil has decreased. The drive to improved education has been successful. Literacy rates have been rising with a national average of 57% in 2000⁽¹⁹⁾: males 63% and females 52%.

Around 600 higher education graduates find work annually. However, the University and institutions of higher education produce about 1,100

⁽¹⁷⁾ World Bank. Higher Education Project in Mauritania (Project Information Document - PID), April 2004.

⁽¹⁸⁾ In 1994 the number of teachers at the primary level was 5,224 and at the secondary 1,777. In 2003, the numbers had grown to 10,652 and 3,167- Data source as above..

⁽¹⁹⁾ EDSM 2000/1 and EPCV 2000

qualified graduates per year. Jobs go unfilled because of the poor fit between skills and knowledge attained and job requirements.

The University of Nouakchott has three schools: science and technology, humanities, and law and economics. In 2004 to 2005, just 12% of students enrolled with the science and technology school. Of the nine specialist technical higher education institutes, the largest teach public administration, teaching, maritime and fishing, medicine and engineering. The engineering centre trains approximately 100 students annually who have tended to become semi-skilled workers in the fields of mechanical engineering, car mechanics, industrial engineering (maintenance), electrical engineering, accounting and administration. About 10% are female⁽²⁰⁾. Programs vary every year and not all subjects are offered each year. Accounting and administration-related programs ceased to be taught in 2000⁽²¹⁾.

In 2004 to 2005, 2374 Mauritanian students studied abroad in 25 countries including France, Tunisia and Morocco. Of the students who studied abroad in 2004 to 2005, 217 were female.

Overall, higher education suffers from poor quality and lack of relevance to employability. This is due to out-dated content and a lack of adequate equipment and facilities (ie. deteriorated buildings, very few computers and laboratories and rudimentary libraries).

Plans exist to increase enrolments in science and technology and in shorter, vocationally-oriented courses including re-training and skill upgrading. Vocational courses offered in academic year 2003 to 2004 included: computer skills for managers, geology and mining, water and the environment, maintenance of electronics and automation systems, quality control of food products, language training for business and the development of arid zones.

There are few opportunities to continue education in a technical or high school environment. The *Institut National de Promotion de la Formation Technique et Professionnelle* (INAP-FTP) was recently created to identify training needs, match supply and demand for training requirements, increase research on evolution of employment and training and provide technical support to training centres and high schools.

4.2.5

Urban Growth

A series of severe droughts and locust infestations over an extended period beginning in the mid 1970s and continuing up until 2005, has contributed to lower agricultural output and a sharp rise in the proportion of the population living in urban areas - 47% of the population in 2005 compared

⁽²⁰⁾ Ministry of Education, Direction de la Recherche Scientifique et des Affaires Académiques, 2005

⁽²¹⁾ Centre Supérieur d'Enseignement Technique (CSET), Direction des Etudes. Synthèse des Résultats Scolaires (depuis sa création). 1981– 2006.

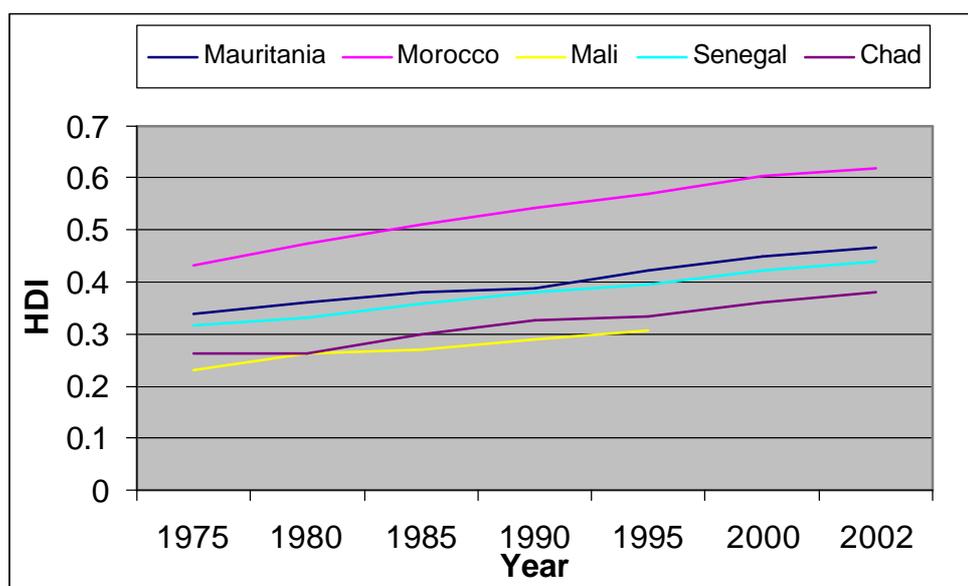
with 9% in 1965⁽²²⁾. The capital Nouakchott has grown from a population of around 7,000 in 1965 to an estimated 750,000 in 2005. In 2004, approximately half of the 72,678 registered immigrants settled in Nouakchott.

4.2.6 **Poverty**

Absolute poverty is defined as 'the cost of the minimum necessities needed to sustain human life' United Nations Development Program (UNDP). According to the WB people earning less than US\$1 per day are considered to be well below the poverty line. Relative poverty is defined as 'the minimum economic, social, political and cultural goods needed to maintain an acceptable way of life in a particular society'⁽²³⁾.

Based on the 2004 UNDP Human Development Index (HDI)⁽²⁴⁾, Mauritania ranks 152 out of 177 countries. Compared with neighbouring countries of Mali (174), Senegal (157) and Morocco (125), it appears to have had some development in recent years as seen in *Figure 4.7*.

Figure 4.7 Human Development Index Evolution from 1975 to 2002



Source: UNDP Human Development Index Trends Data

⁽²²⁾ République Islamique de Mauritanie, Ministère des Affaires Economiques et Office National de la Statistique – Annuaire Statistique 2001. ONS-Tenmiya. Baseline Indicators Report, 2005

⁽²³⁾ UNDP

⁽²⁴⁾ A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living.

There are many factors contributing to Mauritania's poverty situation:

- its size and low population density, causing communications to be very difficult,
- climate and droughts,
- rising levels of birth rates, household sizes, single parent/women headed households,
- illiteracy,
- increased migration of the population towards Nouakchott,
- a fragile institutional framework, and
- emerging civil society.

According to World Bank sources the incidence of poverty fell from 56.6% to 46.3% between 1990 and 2000. This reduction has been attributed to sustained growth since 1992, steady public spending towards social sectors and poverty reduction programs. Poverty in Mauritania has historically been unequally distributed, with higher levels in the rural areas in the south. The poorest regions are located in the south close to the Senegal River valley. Seventy percent (70%) of the rural population is estimated to be poor, ie. earning less than US\$1 per day. In the Nouakchott region the rate ranges between 20% and 30%. In Nouadhibou the rate of poverty is less than 4.2%; this is mainly related to the existence of the mining and fishing industries, the key economic activities of the country which support a large percentage of the Nouadhibou population.

The gap between rich and poor (measured by the Gini coefficient) widened during the period of economic growth between 1996 and 2000.

Table 4.7 outlines the poverty reduction target figures according to Mauritania's 2000 Poverty Reduction Strategy. Comparing the figures for 1996/1998 and 2000, poverty levels appear to have decreased.

Table 4.7 *Poverty Reduction Target Figures*

Priority objectives and performance indicators	Reference Situation				Target Figures		
	Date	Value	Date	Value	2004	2010	2015
Number of poor (in thousands)	1996	1,175	2000	1,161	1,141	860	706
Incidence of poverty (%)	1996	50.0	2000	46.3	41.3	27.1	19.7
Incidence of absolute poverty (%)	1996	32.6	2000	31.4	26.9	13.2	6.6
Gini coefficient *	1996	38.0	2000	39.0	39.0	36.7	35.6
Life expectancy at birth (years)	1998	54	1998	54.06	56.0	59.0	62.0
Infant mortality rate (per 1,000)	1998	105	2000	87.0	80.0	75.0	72.0
Rate of malnutrition among children < 5 years	1999	23	2000	32.0	20.0	15.0	13.0
Proportion of households connected to water system	1998	35	1997	35.0	45.0	54.0	60.0
Price per million ³ of water (USD)	1997	1.03	1997	1.03	1.03	1.07	1.10

* *The Gini coefficient, which is measured for expenses, should not experience significant evolution, as the consumption patterns of Mauritians do not change very much from one income level to the next.*

Source: *Report on the Implementation of the Poverty Reduction Strategy Paper in 2002 (Annex 1 - Revised Poverty Reduction Objectives), June 2003 ; Poverty Reduction Strategy Paper (Annex 1 Poverty Reduction Target Figures), December 2000 .*

The five priority areas of the national Poverty Reduction Strategy Paper for 2001 to 2004 are:

- rural development,
- urban development of settlements located on the outskirts of large cities and towns such as Nouakchott, Nouadhibou and Rosso,
- education,
- health, and
- water supply.

4.2.7 *Health*

There has been a substantial expansion of health care coverage in Mauritania, from 30% in 1990 to 70% in 1998⁽²⁵⁾. Funding for the health sector as a percentage of GDP has also increased from 1.6% in 2000 to 2.9% in 2002.

Table 4.8 summarises the national data for Mauritania's key health indicators. The leading causes of morbidity in Mauritania include malaria, respiratory illnesses and diarrhoea. Other important health issues include conjunctivitis, tuberculosis and HIV/AIDS.

⁽²⁵⁾ Medical cover within a 10 km radius

Table 4.8 **Key National Health Indicators and Diseases⁽²⁶⁾**

Key Indicators	2003 Statistics (%)
	National
Incidence of maternal deaths	1.35
Incidence of still birth	2.72
Incidence of morbidity due to malaria	4.27
Incidence of respiratory illness	19.17
Incidence of diarrhoea	7.06
Incidence of intestinal parasites	3.67
Incidence of TB	0.06
Incidence of conjunctivitis	3.67
Incidence of Schistosomiasis	3.67
Incidence of HIV	0.07

Source: *Annuaire des Statistiques Sanitaires Annee 2003, MSAS*

Skilled medical staff are in short supply. Efforts at increasing and retaining the number of staff have been limited due to the low salaries and poor working condition including adequate equipment. Training facilities are limited due to the lack of a university medical school in Mauritania. Most of the doctors are trained overseas in France, China, Russia and other countries in Africa. Many obtain good qualifications and remain overseas contributing to 'brain drain'.

4.2.8 **Industry Regulation**

Mauritania has little large-scale industry and hence an environmental code and accompanying regulations have only been developed relatively recently. Notably, EIA have been undertaken for iron ore mining and road construction. The Chinguetti Project EIA was the first EIA for an oil production project in Mauritania. The seismic and early exploration drilling activity was subject to EIAs and EMPs.

4.3 **NOUAKCHOTT**

4.3.1 **Population Growth and Demand on Infrastructure**

Over the past 50 years, the population in Nouakchott has increased substantially. The most recent ONS projections estimate Nouakchott's population at almost 750,000 inhabitants in 2005.

It is estimated that approximately 100,000 people were living in informal settlements in 2000⁽²⁷⁾. Living conditions for the urban poor are difficult. Key indicators are presented in *Table 4.9*.

⁽²⁶⁾ *Annuaire des Statistiques Sanitaires Annee 2003, Ministere de la Sante et des Affaires Sociales*

Table 4.9 Housing & Key Service Conditions in Nouakchott (2000)

Indicators	%	Indicators	%
Dwelling type		Energy at home	
Concrete houses	63.9	Electricity access (network)	36.1
Barracks or Huts	24.5	Candles	60.3
Dwelling Status		Wood/charcoal for cooking	52.8
Ownership	40	Gas for cooking	47.1
Rental	32.2	Waste	
Appropriation	20.7	Collected	28.6
Water access		Thrown out	69.9
Network (home or shared)	19.8	Sanitation system at home	
Water merchants	75.8	Latrines with septic tanks	59.8
		No toilet or use of buckets	32.6

Source: EPCV2000

Land and house prices across the City have increased in recent years but land speculation is not a recent phenomenon. The Schema de developpement et d'amenagement urbain (SDAU) estimates that prices have increased by 20 to 30% each year during the mid-1990s. The legal and institutional framework related to land tenure allows for land grants that lead to on-selling and inflated profits.

Car accidents are another product of rapid urbanisation with few planning controls. In 2005, there were approximately 60 accidents per day in Nouakchott with 10 to 12 people per day injured and 5 to 7 fatalities, including pedestrians⁽²⁸⁾.

4.3.2 Poverty and Health

The communes of Toujounine, El Mina and Dar Naim appear to be particularly vulnerable to immigration with a high percentage of spontaneous settlements. Arafat and Riyad also present signs of fragility given their high percentage of unemployment and illiteracy. Overcrowded conditions, poor hygiene, inadequate infrastructure services (water and sanitation, waste) and lack of healthcare treatment exacerbate health issues, especially digestion-related diseases such as diarrhoea, (which has an incidence in Nouakchott 1.4 times higher than the national average). Access to water is a key public health, economic and social equity issue. It is planned to supply Nouakchott with water from the Senegal River under the Aftout-Es-Saheli project.

As shown in *Table 4.10*, HIV and tuberculosis rates are significantly higher than the national values (2.6 and 3.6 times respectively).

⁽²⁷⁾ ONS and Urban Development and Planning Framework, Schema de developpement et d'amenagement urbain (SDAU).

⁽²⁸⁾ Woodside HSE Award Entry Form, Mauritania Road Traffic Accident Prevention, 2005

Table 4.10 Key Nouakchott Health Indicators

Key Indicators	2003 Statistics (%)	
	Nouakchott	National
Incidence of maternal deaths	1.67	1.35
Incidence of still birth	2.11	2.72
Incidence of morbidity due to malaria	2.81	4.27
Incidence of respiratory illness	24.99	19.17
Incidence of Diarrhoea	10.09	7.06
Incidence of intestinal parasites	4.95	3.67
Incidence of TB	0.22	0.06
Incidence of conjunctivitis	4.95	3.67
Incidence of Schistosomiasis	4.95	3.67
Incidence of HIV	0.18	0.07

Source: *Annuaire des Statistiques Sanitaires Année 2003, Ministère de la Santé et des Affaires Sociales*

Within Nouakchott access to basic infrastructure varies widely. For example, access to sanitation is around 66% for the city as a whole, but the access rate in poor urban neighbourhoods was estimated at 10%⁽²⁹⁾ in 2000.

As a result of rises in prices of food products, malnutrition levels have risen. Limited access to vitamins has led to severe vitamin deficiencies particularly amongst young children. Recent data from MSAS suggests that the most affected communes of Nouakchott, in terms of malnutrition in children, are Dar Naim (4,557 new cases), Arafat (1,320 new cases) and El Mina (2,555 new cases).

4.3.3 Social Pathologies

While prostitution is illegal in Mauritania, the demand for commercial sex and levels of prostitution have risen (currently, there are around 500 prostitutes working and living in Nouakchott, as opposed to around just 10 in the 1980s). A recent study of 40 prostitutes in Nouakchott carried out by an NGO⁽³⁰⁾ showed that 13 of the group were HIV positive. There is very little documentation on crime levels in Nouakchott. According to the National Security office⁽³¹⁾, crime rates have not increased in Nouakchott in recent years.

4.4 COASTAL COMMUNITIES NOUADHIBOU TO DAKAR

For the purposes of analysis the coastal communities in Mauritania and Senegal (between Nouadhibou and Cap Vert) have been considered as 11

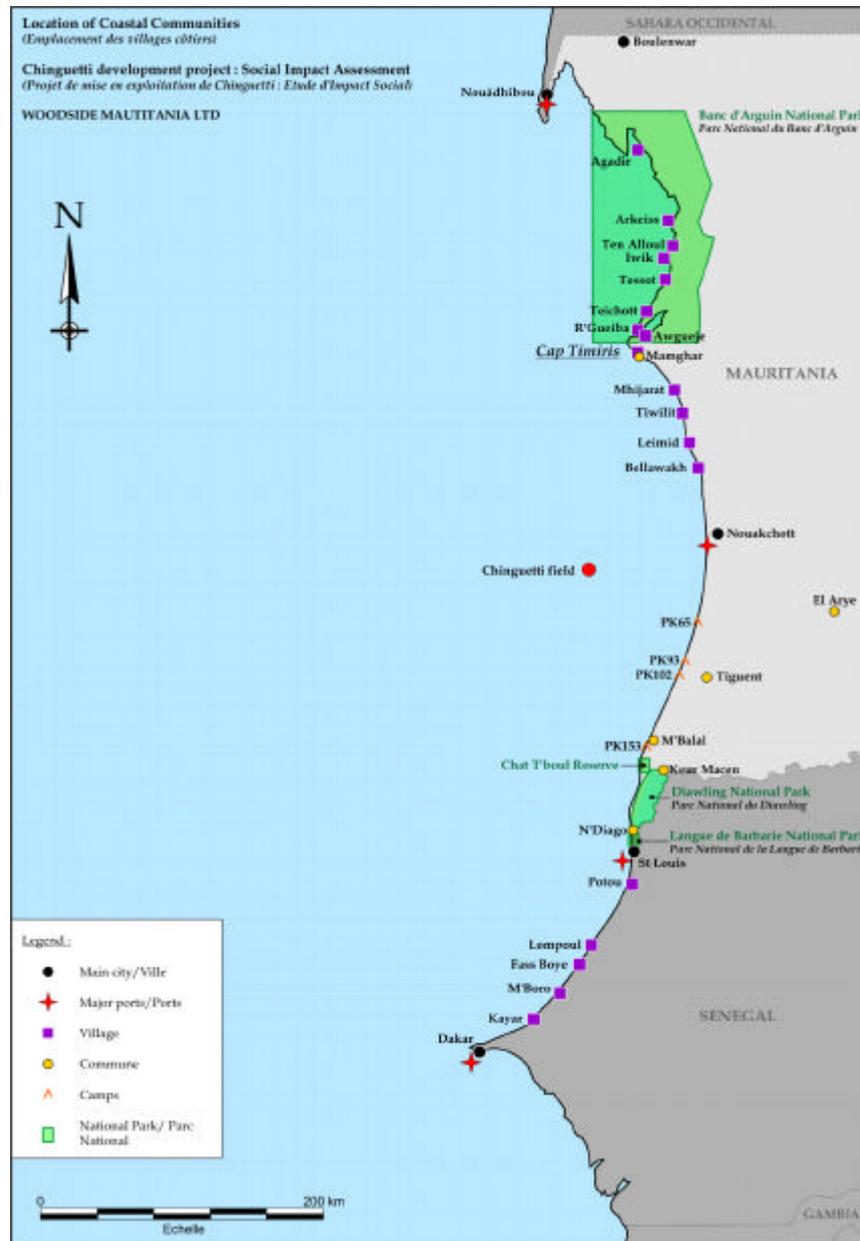
⁽²⁹⁾ RIM. Rapport sur la mise en oeuvre du Cadre Stratégique de Lutte contre la Pauvreté (CSLP) en 2003. July 2004.

⁽³⁰⁾ SOS Pair

⁽³¹⁾ Interview with Colonel Ely Ould Mohamed Vall on July 21st 2005

areas – four in Mauritania and seven in Senegal – and the principal population centres are shown in *Figure 4.8*.

Figure 4.8 *Location of Coastal Settlements in Relation to Chinguetti Project*



These settlements are reliant, to varying degrees, upon fish resources for their livelihoods. In Mauritania, domestic annual consumption of fish remains low with an average of 3kg to 4kg per capita (compared with the average consumption in African countries of 8.2kg per capita). However, *Table 4.11* shows a number of coastal communities are almost totally reliant on the sea for food and income.

Table 4.11 Fishing and the Coastal Communities of Interest

	Mauritania						Senegal							
	Nouadhibou	PNBA	Cap Timiris	Nouak hott	South (PK & N'Diago)	Total	St Louis	Potou	Lompul	Fass Boye	Mboro	Kayar	Dakar	Total
Reference year/period	1998 to 2002	1998 to 2002	1998 to 2002	1998 to 2002	1998 to 2002		2003	2004	2004	2004	2004	2004	2003	
Population (RGPH, 2000)	72,337	~1100 to 1600	~900 to 1000	558 195			155,000	700	1,500	3,500	1,135	17,000		
Employed in fishing (average of seasonal)	3,900	400	300	3,300	4,200	12,100	1,850	225	275	1,000	1,050	4,500	16,000	24,900
Active boats / month (average of seasons)	1,800 ⁽¹⁾	90	400 ⁽²⁾	1,025 ⁽²⁾		Env. 4,000	160	50	50	215	215		2,500	
Fish merchants & processors	4,300	60	160	2,040	90								n/a	
Main fishing gear	Net lines, octopus pot	Nets, lines	Nets, lines, octopus pot	Nets, lines, octopus pot	Nets, lines, octopus pot		purse seine	fixed gillnet	fixed gillnet	fixed net purse seine	fixed net	purse seine	various	
Main fishing seasons	All year	All year	Nov to Jan; April to Jun	All year	April to July									
		Jan to June (meagre)	Feb to Oct (meagre)					April to Sept	April to Sept	June to July	March to June/ July	Nov to May	All year	
		August to Jan.: (mullet)	Jun to July & Nov to Dec (octopus)		Jun to July & Nov to Dec (octopus)									
Annual catch (tonnes)	49,472	2,300	28,109			79,881	34,500	1,800	1,420	2,270	700	47,700	38,670	127,060
Estimated commercial value (billions FCFA)	N/A	N/A	N/A	N/A	N/A	N/A	5.3	0.6	0.4	0.7	0.4	7.1	23.4	38.6

(1) Directeur de la peche artisanale; (2) IMROP 2005

In Senegal annual fish consumption averages 28kg per capita⁽³²⁾ (75% of protein intake) and availability of fish protein has a strong bearing on nutrition, especially in these coastal areas.

Access to services and infrastructure of all kinds is more difficult in coastal communities in both Mauritania and Senegal. Consequently incomes, health and education levels are poorer than in urban areas. A detailed comparison is available in *Annex D1-D3* but a useful illustration is a comparison of health outcomes in the four Mauritanian coastal areas shown in *Table 4.12* and those presented in the previous section profiling Nouakchott.

Table 4.12 *Key Coastal Wilaya (District) Health Indicators*⁽³³⁾

Key Indicators	2003 Statistics per Wilaya (%)			
	Trarza	Nouadhibou	Nouakchott	National
Incidence of maternal deaths	0.94	0.51	1.67	1.35
Incidence of Still birth	2.71	2.49	2.11	2.72
Proportional incidence of Malaria*	14.64	3.65	2.81	21.09
Incidence of respiratory illness	22.55	21.06	24.99	19.17
Incidence of Diarrhoea	7.76	10.52	10.09	7.06
Incidence of intestinal parasites	4.38	3.98	4.95	3.67
Incidence of TB	0.04	0.14	0.22	0.06
Incidence of conjunctivitis	4.38	3.98	4.95	3.67
Incidence of Schistosomiasis	4.38	3.98	4.95	3.67
Incidence of HIV	0.03	0.23	0.18	0.07

* 2004 MSAS Data

Note: Data limitations - the Wilaya of Nouadhibou is mostly composed of the commune of Nouadhibou: 72,337 people live in the commune of a total 79 516 living in Dakhlet Nouadhibou (Wilaya); therefore health indicators very much represent those of the commune of NDU.

The Wilaya of Trarza covers a territory much larger than the coastal region, hence health values do not fully reflect the situation in villages and give mere indications that must be refined with data (including qualitative data) from coastal villages.

⁽³²⁾ FAO, 2001

⁽³³⁾ Annuaire des Statistiques Sanitaires - Année 2003, Ministère de la Santé et des Affaires Sociales

5.1 FRAMEWORK FOR DISCUSSION OF IMPACTS

5.1.1 Listing of Impacts

This section of the report documents and assesses the impacts predicted to occur in each phase of the Project. The impacts are listed in *Table 5.1* and subsequently discussed on the basis of whether they are routine, non-routine or cumulative.

Table 5.1 Summary List of Impacts

Positive Impacts	Significance*	Potential Negative Impacts
<ul style="list-style-type: none"> Establishment of a domestic oil industry Increased Government revenues Indirect and induced employment 	Major	<ul style="list-style-type: none"> Exchange rate appreciation Increased inflation
<ul style="list-style-type: none"> Direct employment Increased health, safety and environmental professionalism in workplace culture Increased expenditure and local economic development Provision of training to Mauritians via GPC Increase in skills and marketability as a result of employment on the Chinguetti project Training of Mauritanian workers by Woodside 	Moderate	<ul style="list-style-type: none"> Political and social tension: expectations of revenues Political and social tension: revenue management Movement of skilled workers to oil industry from other sectors Increased pressure on social infrastructure Immigration facilitated by improved transportation network Eventual reduction in revenues to the Government Eventual reduction in employment and economic activity Increased social pathologies Increased costs to business
	Minor	<ul style="list-style-type: none"> Increased demand for high quality housing Social tension: perceptions of employment inequality
	Negligible	<ul style="list-style-type: none"> Increased traffic volumes and road traffic accidents Port congestion Creation of tension between Mauritanian nationals and expatriate workforce Health and environmental risks from waste management
<ul style="list-style-type: none"> Decline in Livelihoods Resulting from Oil Spill : The significance of the impact on livelihoods as a result of an oil spill was not assessed in the same manner as routine and cumulative impacts. 		
<p>* 'Significance' is the significance of the residual impact, after impact mitigation or enhancement strategies are applied. It represents an assessment of the 'severity' (for negative impacts) or 'desirability' (for positive impacts) and the likelihood of the impact occurring.</p>		

5.1.2

Format of Impact Assessment

Table 5.2 presents a summary of the impact assessment, mitigation strategies and significance of residual impacts, including identification of:

- project phase;
- project aspect giving rise to the impacts;
- people likely to be affected by impacts;
- the basis for impact evaluation;
- mitigation and optimisation measures; and
- significance of residual impacts.

Detailed discussion of these aspects is provided in the remainder of this chapter using the following format.

Impact Identification
Descriptive text explaining source of impact and impact consequences. Includes characterisation of impact in relation to <ul style="list-style-type: none">• phase of the Project (exploration & development, operations and decommissioning)• type of impact (direct, indirect, induced)
Impact Evaluation
Descriptive text defining: <ul style="list-style-type: none">• The nature of the impact (positive or negative);• Who the relevant Project Affected People are; and• A qualitative description of the desirability/severity consideration factors ie:<ul style="list-style-type: none">○ <i>Duration of impact</i>○ <i>Extent of the impact</i>○ <i>Manageability of the impact</i>○ <i>Ability to adapt</i> This section includes a description of the relative likelihood of the occurrence and where appropriate, some explanatory text to highlight any critical issues.
Mitigation / Enhancement Strategies
Description of strategies proposed to mitigate or enhance the impacts described above. The assessment distinguishes between those strategies which are within Woodside's control and responsibility and therefore represent a commitment, and those suggested strategies which Woodside believes should be discussed but are likely to fall within the jurisdiction of Government or the capabilities of other parties.
Residual Impact
Assessment of significance of any residual impact expected following implementation of mitigation or enhancement strategies. Represents the outcome of the assessment of Desirability/Severity x Likelihood (see Annex C, Methodology for significance criteria matrices)

The criteria used for evaluating severity or desirability of impacts have been defined in some detail and are included in Annex C (Tables C1 to C3). Common terms used to describe impact duration, extent, manageability and ability to adapt are highlighted and should be referenced in reading the impact evaluation. Separate criteria have been developed for health-related impacts.

Table 5.2 Summary of Social Impacts and Mitigation Measures

Section	IDENTIFICATION						EVALUATION		MITIGATION / ENHANCEMENT				CLASSIFICATION														
	Impact	Phase			Group			Type			Project Affected People	Nature	LEADERSHIP IN IMPLEMENTATION ⁽¹⁾				Desirability / Severity			Likelihood			Significance				
		Expl & Devel	Operations	Decommissioning	Routine	Cumulative	Non-routine	Direct	Indirect	Induced			Woodside	Contractors	Government	IGOs	Low	Medium	High	Low	Medium	High	Negligible	Minor	Moderate	Major	
5.3.2	Exchange rate appreciation Exchange rate appreciation and impacts on non-oil exports resulting in increased dependency on oil sector	✓			✓				✓		National Population	-	Investigate the potential for fluctuations in the balance of trade and undertake monitoring.						✓		✓						✓
5.3.3	Increased inflation Combination of high oil prices and debt relief can lead to increased spending and rising prices	✓			✓				✓		National Population	-	Investigate options for minimising the risk of increased inflation.						✓		✓						✓
5.3.4	Creation of political and social tension in relation to the expectations of oil revenue The expectations of Government and public prior to first oil can lead to political tension, instability, conflict and unconstitutional actions	✓			✓				✓		National Population	-	Adopt transparency standard in respect to public sector finance.														
													Implement commitments to electoral reform and democratic elections in accordance with the proposed schedule.														
													Ensure that the communications plans for the Project include accurate information on the scale of the Project and the timing associated with revenues.					✓			✓				✓		
													Fulfil reporting requirements in a manner consistent with commitments made under Extractive Industries Transparency Initiative.														

(1) It is recognised that a number of groups may have a role in implementation of strategies; this section identifies only the group/entity with leadership responsibility in implementation.

Table 5.2 Summary of Social Impacts and Mitigation Measures

Section	IDENTIFICATION									EVALUATION		MITIGATION / ENHANCEMENT				CLASSIFICATION											
	Impact	Phase			Group			Type			Project Affected People	Nature	LEADERSHIP IN IMPLEMENTATION ⁽¹⁾				Desirability / Severity			Likelihood			Significance				
		Expl & Devel	Operations	Decommissioning	Routine	Cumulative	Non-routine	Direct	Indirect	Induced			Woodside	Contractors	Government	IGOs	Low	Medium	High	Low	Medium	High	Negligible	Minor	Moderate	Major	
5.6.2	<p>Increased expenditure and local economic development Expenditure of Local Economy (1) indirect employment: 1000 jobs among suppliers to key Woodside contractors caused by spending on input to goods & services supplied to the Project (2) induced employment: 5050 jobs resulting from supply of goods and services bought with wages of additionally employed persons.</p>	✓	✓	✓	✓			✓	✓		Businesses in Nouakchott and indirect workforce, local and international contractors	+	Work with local business to increase the likelihood of goods and services being procured locally, rather than imported.						✓			✓			✓		
5.7	Routine Impact: Additional Demand for Infrastructure																										
5.7.1	<p>Immigration for Project opportunities resulting in increased pressure on social infrastructure Perceptions of employment opportunities with the Project may result in immigration which will place significant pressure on social infrastructure in Nouakchott.</p>	✓	✓	✓	✓				✓		Migrants, health practitioners, residents in the poorer districts of Nouakchott and vulnerable groups	-	Establish clear migration policies to address the potential for immigration. Provide the Government with accurate employment projections.						✓			✓			✓		

(1) It is recognised that a number of groups may have a role in implementation of strategies; this section identifies only the group/entity with leadership responsibility in implementation.

Table 5.2 Summary of Social Impacts and Mitigation Measures

Section	IDENTIFICATION									EVALUATION		MITIGATION / ENHANCEMENT				CLASSIFICATION												
	Impact	Phase			Group			Type			Project Affected People	Nature	LEADERSHIP IN IMPLEMENTATION ⁽¹⁾				Desirability / Severity			Likelihood				Significance				
		Expl & Devel	Operations	Decommissioning	Routine	Cumulative	Non-routine	Direct	Indirect	Induced			Woodside	Contractors	Government	IGOs	Low	Medium	High	Low	Medium	High	Negligible	Minor	Moderate	Major		
5.7.2	Health and environmental risks of waste management (1) visual impact (2) health risk linked to air quality	✓	✓		✓					Road users, operating contractors, residents closest to transfer station	-	Finalise waste management plan in 2005 to take account of the Chinguetti operations phase and continued exploration activity.					✓			✓				✓				
												Implement changes arising from the new waste management plan.																
5.7.3	Port congestion Crucial food supplies are imported into Mauritania through the port. If the project's vessel movements lead to port congestion, the impact on those supplies may become critical.	✓	✓		✓					Importers, exporters and consumers	-	Engage with Port Master in planning traffic movements, land use and administration allow for continued and enhanced Port operations.					✓			✓				✓				

(1) It is recognised that a number of groups may have a role in implementation of strategies; this section identifies only the group/entity with leadership responsibility in implementation.

Table 5.2 Summary of Social Impacts and Mitigation Measures

Section	IDENTIFICATION									EVALUATION		MITIGATION / ENHANCEMENT				CLASSIFICATION										
	Impact	Phase			Group			Type			Project Affected People	Nature	LEADERSHIP IN IMPLEMENTATION ⁽¹⁾				Desirability / Severity			Likelihood			Significance			
		Expl & Devel	Operations	Decommissioning	Routine	Cumulative	Non-routine	Direct	Indirect	Induced			Woodside	Contractors	Government	IGOs	Low	Medium	High	Low	Medium	High	Negligible	Minor	Moderate	Major
5.8.2	<p>Increased health, safety and environmental professionalism in workplace culture Safety awareness in business culture Environment, health and safety management among prime contractors, reduced deaths/injury, downtime, injury compensation and environmental damage and reduced level of OHS, environment and human rights risk makes foreign direct investment more attractive.</p>	✓	✓		✓				✓	Direct and indirect workforce and families	+	Provide continuous reinforcement training and monitor and report on HSE performance.					✓			✓			✓			
5.9	Cumulative Impacts																									
5.9.1	<p>Immigration facilitated by an improved transportation network Immigration (1) additional traffic facilitates greater movement of people in turn through Nouakchott (2) exposure to other cultural norms – de-emphasis of the local culture (3) increase in demand for commercial sex (4) increased prevalence of communicable diseases (TB, HIV, malaria).</p>	✓	✓		✓			✓	Migrants commercial sex workers, other clients of commercial sex workers, health practitioners, residents in the poorer districts of Nouakchott (eg El Mina, Arafatt, Dar Naim), vulnerable groups (ill, elderly, women, disabled) and Communauté Urbaine de Nouakchott.	-	Establish clear migration policies to address the potential for immigration. Provide the Government with accurate information on Project employment prospects to assist them to communicate the realistic employment prospects available in Nouakchott.					✓			✓			✓				

(1) It is recognised that a number of groups may have a role in implementation of strategies; this section identifies only the group/entity with leadership responsibility in implementation.

5.2 ROUTINE IMPACT: ESTABLISHMENT OF A DOMESTIC OIL INDUSTRY

5.2.1 Establishment of a Domestic Oil Industry

Impact Identification

The Chinguetti Project is the first oil project to be developed in Mauritania following the Government's decision to promote its oil and gas potential as a means of increasing revenues and further diversifying the economy and addressing the high incidence of poverty. As such, the Government has responsibility to address many of the social costs and benefits of the Project.

The impact arising during the **development** and **operations** phases. The impact is **direct**.

Impact Evaluation

The impact is **positive**, affects the whole country and has long-term implications for the economy and society.

Desirability of the impact comprises:

- *Duration of the impact* is *medium-term*. It begins in the early years of the Chinguetti Project and has the potential to be extended subject to ongoing success in exploration and development.
- *Extent of the impact* is *national* with implications for trade and political relationships with other nations.
- *Manageability of the impact* will be *low*. It is complex and will require time before opportunities associated with the establishment of the industry can be realised. However, most implications of the creation of a domestic oil industry are able to be managed by the Government with the assistance of third parties to build capacity in the short term.
- *Ability to adapt* is *high* with many parts of the population likely to benefit from the expenditure of revenues generated by the oil industry.

The **likelihood** of the impact occurring is *high*. The duration of the impact and the ability to adapt will be dependent on the Government's enhancement strategies.

Enhancement Strategies

The Government of Mauritania has made the decision to approve the Chinguetti Project and, in so doing, create the opportunity to establish a domestic hydrocarbon industry. It is expected that the Government and IGOs (eg. WB, IMF, IFC) will consider the implications of the establishment of this industry and develop commitments and national action plans to address:

- Revenue management;
- Environmental assessment and monitoring;
- Oil industry regulation;
- Sustainable economic development;
- Training and skills development; and
- National oil spill preparedness.

In support of government initiatives to manage this impact, Woodside will:

- Support the Government, where appropriate, to strengthen its ability to promote acreage, regulate and manage industry issues and strategic national opportunities in the hydrocarbon sector.

Residual Impact

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.3 ROUTINE IMPACT: CREATION OF A FINITE REVENUE STREAM

5.3.1 Increased Government Revenues

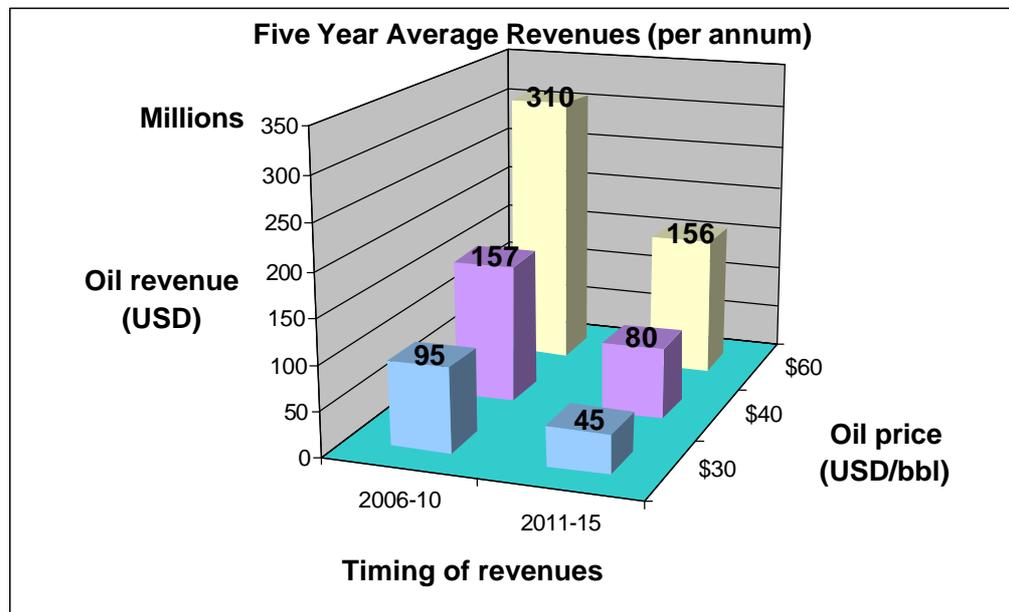
One of the most significant impacts of the Project is the revenue that flows to the Government of Mauritania as a result of the PSCB.

Based on a production profile developed by Woodside, tax rates provided by Woodside and three oil price assumptions (US\$30, US\$40 and US\$60 per barrel), the Government share of revenue and taxation income can be calculated. This is presented in *Figure 5.1*.

Even at the lower price of US\$30 per barrel, average oil revenues to the Government for the first five years of production (2006 to 2010) will add approximately 40% more to the Government's budget, per year. At the US\$60 price per barrel, the revenue is estimated to be on average 130% higher, per year.

Revenue flows are expected to fluctuate and decline sharply in subsequent years. In the period 2011 to 2015 the additional revenue over the 2002 benchmark is in a range of 20% to 60%.

Figure 5.1 *Illustration of Possible Government Revenue Flows from the Project*



This impact arises during the **operations** phase. The impact is **direct**.

Impact Evaluation

This impact is **positive** and affects the Government of Mauritania and the national population.

Increased Economic Growth

The biggest impact of the Chinguetti Project on the Mauritanian economy will come through the production and sale of oil. It is anticipated that almost all the oil produced will be exported and sold in the international markets. In addition, as the oil is produced offshore, there are only a few linkages,

both upstream and downstream, that could add value to the economy⁽³⁴⁾. As such, most of the oil related growth will come from the value that is added to the GDP from oil exports net of the cost of its production.

As an input-output model for Mauritania is not publicly available, a nominal GDP of US\$1.8 billion⁽³⁵⁾ from 2005 (base year) and the total net revenues earned from the first year of production onwards, are used to calculate the direct oil related contribution to GDP growth.

In the first year of oil production (2006) GDP will grow by an additional 19% to 35%, depending on an oil price of US\$40 per barrel or US\$60 per barrel respectively. This is in addition to the non-oil related growth coming from the more established sectors within the Mauritanian economy, such as construction and services. It is important to note that the calculations do not take into account the multiplier effects of direct, indirect or induced spending of the oil related income in Mauritania. This would have an additional affect on sectors such construction, services and transport and telecommunications.

Based on an assumption that the Chinguetti Project is the only oil project in operation, it is anticipated that oil related GDP growth will decline to around 12% to 14% in 2007, at an oil price of US\$40 per barrel or US\$60 per barrel respectively. As the production peaks, a GDP steady state will be reached, where the Project will not contribute to growth. In subsequent years, as the production starts falling and assuming no expansions or new discoveries in the field, oil related GDP growth will be negative.

The decline in the oil related GDP growth rate can be reduced in part through increased purchases of domestic goods and services and subcontracting of more domestic firms, such that the indirect impact of the Chinguetti Project increases the total Project value added.

Impact of Oil Revenues on the Balance of Payments

Almost all of the oil produced from the Chinguetti Project will be exported and sold in the international markets. This will have significant impacts on the balance of payments in Mauritania. Provided that oil prices and international demand remain relatively stable, the Chinguetti Project will generate additional exports valued at between US\$637 million to US\$955 million, based on an oil price of US\$40 per barrel or US\$60 per barrel respectively. Assuming that the 2005 export level of US\$581 million is sustained, exports would increase by 110% to 164% in 2006.

⁽³⁴⁾ However as identified in Section 5.3.1-5.3.2 there are various indirect activities, particularly "sidestream" supply and support activities, and induced contributions that will add value to the GDP. These are not taken into account in the simplified calculations to give economic contribution of oil.

⁽³⁵⁾ IMF Public Information Notice No. 05/71.

Imports are expected to rise to US\$800 million in 2006, as forecast in the latest Economist Intelligence Unit report (October, 2005)⁽³⁶⁾. This is largely the result of increased spending on food imports and further investments in the oil industry, for example. This will represent a net external trade gain of about US\$418 million. These net trade gains may reduce Mauritania's trade deficit from an estimate of 21% of GDP in 2005 to a surplus of 19% of GDP in 2006, other things being equal. However, the eventual size of the surplus or reduction on deficit will depend on the costs of foreign investment including profit repatriation, debt amortization, and investment and management services.

The Project's overall direct impact on the balance of payments is not limited to the current account as it is unlikely that the Government of Mauritania will convert all the revenues into Ouguiyas, by bringing the dollar-based oil revenue into the country. The economy of Mauritania does not have the capacity to absorb the large influx of capital and associated rapid appreciation in the exchange rate and rise in the inflation rate that would result. Instead, it is likely that the Government will decide to hold a portion of the oil revenues abroad by accumulating foreign assets such as US treasury bonds. This would be in effect a net capital outflow.

The impact may arise during the **operations** phase and is **indirect**. It will also be dependent on many other factors not related to the Project.

The **desirability** of the impact recognises:

- *Duration of the impact* will be *medium-term*; for the duration of the Project (which is here assumed to be 10 to 15 years).
- *Extent of the impact* will be *national*, with additional international ramifications with neighbouring countries.
- *Manageability of the impact* is *medium*. Government capacity to respond to the requirements of a new industry are constrained by available skills, experience and education and training.
- *Ability to adapt* is *high*; while there are numerous spending priorities and the efficient spending of the revenue on poverty reduction will be a challenge, recent Government initiatives demonstrate a positive commitment.

The **likelihood** of the impact occurring is **high**. The impact will definitely happen with revenues expected to flow in 2006.

⁽³⁶⁾ The Economic Intelligence Unit, Mauritania Country Report, October 2005.

Enhancement Strategies

Government has responsibility for management of the effects of increased revenues on the economy. It may seek to strengthen the budget appropriation processes and take appropriate regulatory measures to sustain the improved balance of trade. It has announced its intention to adopt transparency initiatives.

In support of actions taken by the Government, Woodside will:

- Disclose payments to the Government in accordance with the EITI.
- Investigate the feasibility of additional volumes of oil production through tieback opportunities.

Residual Impact

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.3.2 Exchange Rate Appreciation

Impact Identification

As a result of the reforms introduced under the guidance of the IMF, exchange controls have been removed and the value of the Ouguiya is now nominally determined by the market (although it is still subject to periodic interventions by the Central Bank of Mauritania). Despite the remaining restrictions, the Ouguiya is expected to appreciate against all major currencies when oil revenues start flowing into the country.

As Mauritania lacks the capacity to manage the challenges arising from such an appreciation of the exchange rate, it may cause non-oil related exports to be relatively more expensive and therefore less competitive in international markets. With declining relative productivity, the agriculture, manufacturing, fishing and mining sectors in Mauritania may decline with adverse consequences for the main non-oil exports. This may increase the dependence on oil and diminish the diversity of the economy. This phenomenon has been termed as “Dutch disease” and is a common ailment of many oil producing countries. It should be noted that it is only a

significant issue if the economy cannot re-adjust when oil exports end. Economies tend to be flexible, and as most other economic sectors in Mauritania are also natural resource based, long term adjustment problems are unlikely.

The impact arises during the **operations** phase. The impact is **indirect**.

Impact Evaluation

The impact is **negative** and affects exporters and employees of exporters.

The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term*; the life of the Project's revenue flows.
- *Extent of the impact* will be *national* in scale, but will only affect those engaged in the cash economy.
- *Manageability of the impact* is *low*. Policy tools exist to prevent appreciation but an unpopular devaluation of the currency (making imports, including basic foodstuffs more expensive) requires political will.
- *Ability to adapt* to currency appreciation is *low* due to the price-sensitive nature of commodity markets (99% of Mauritanian exports) and limited competitiveness of the non-oil export sector.

The **likelihood** of the impact occurring is *medium*. The degree of appreciation will depend upon the actions of the Government but is likely given the delay in preparing oil revenue management plans.

Mitigation Strategies

The Government is responsible for management of this economic impact. It is anticipated that the Government and the IMF will wish to investigate the potential for balance of trade fluctuations and monitor the situation.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.3.3 Increased Inflation

Impact Identification

The combination of debt relief and high oil prices may trigger a chain of events that could have some detrimental effects on the economy. When the oil price is high, many governments face high expectations of increased spending on large infrastructure projects or on programs of poverty alleviation to absorb the increased revenue. Often, budgets formed during boom years when oil prices are high, have to be substantially cut when the oil price falls. The fall reduces the revenue available to a government to spend on projects and investments. Governments may have to resort to borrowing and therefore increase its debt levels.

An increase in government spending can also result in a dramatic increase in the size of the public sector and lead levels of demand for goods and services that exceed the capacity of the economy. Under such circumstances, inflation could be created.

In addition, much of the spending may occur without much recourse to project planning and is characterised by short-term and risk averse investments requiring little input other than capital. This may result in many projects that are financed by oil windfall gains becoming unproductive or non-viable only a few years operation. Oil revenue windfalls may also replace more stable sources of government revenues such as taxes on income and goods and services. This could “free” governments from the demands of accountability and fiscal transparency that come from taxation, and thus undermines representative and efficient government.

Whilst the Government of Mauritania has some proposals for what it will do with the large increases in Government revenues as a result of oil revenue windfalls, as yet there has been no formal institution set up to help manage these revenues. This increases the risk of excessive and imprudent investments and spending that exceeds the absorptive capacity of the

economy and institutional capacity of the Government. It is expected that the Government will increase its spending from 2006 onwards, once oil revenues start flowing. This will help keep inflation high. However, the reduced prices of imports as a result of an exchange rate appreciation, will temper this rise.

The impact arises during the **operations** phase. The impact is **indirect**.

Impact Evaluation

The impact is **negative** and affects the entire nation. The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term*; the life of the Project.
- *Extent of the impact* will be *national* and affect all sectors of the community.
- *Manageability of the impact* is *low* for the Project as investment decisions of the Government are a sovereign responsibility.
- *Ability to adapt* to deteriorating public finances and reduced growth is *low* given the very large demands on public sector services and high levels of poverty.

The **likelihood** of the impact occurring is *medium*. The experiences of many African, Asian and South American countries suggest that it is likely although there are some countries which have avoided this distortion (Malaysia, Indonesia, Botswana).

Mitigation Strategies

It is expected that the Government and IMF will work on mechanisms to ensure Mauritania avoids the negative impacts described above. This may include updates on the PRSP and the Medium Term Expenditure Framework (MTEF). It may also include design of a comprehensive management strategy to cover revenue collection, investment, budget appropriation and transparency. There is little Woodside can practically do to mitigate this impact.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	<i>Low</i>	Negligible	Minor	Minor
	<i>Medium</i>	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.3.4 **Creation of Political and Social Tension In Expectation Of Oil Revenue**

It has often been the case that first development of oil in a country disturbs the equilibrium of domestic social and political forces. In other countries this has led, to tensions and open conflict between regions, between racial and ethnic groups, between powerful families, and between individuals. In this atmosphere, suspicion or perception of corruption can be strong enough to encourage unconstitutional action.

The impact of social and political tensions would be felt nationally.

This impact is **indirect** and relates to the **exploration and development** phase.

Impact Evaluation

This impact is potentially **negative** and affects the Government, political and national population.

The **severity** of the impact is described below:

- *Duration of the impact* will be short term – until first oil and first round of budget expenditure.
- *Extent of the impact* will be *national* with every individual potentially affected in the event that there is a change of elected representatives or their representative’s effectiveness.
- *Manageability of the impact* is *low* and Woodside Mauritania has limited influence over the Government’s management of peoples’ expectations with regards to the distribution of oil industry revenues.
- *Ability to adapt* is *unknown* until the policy directions of Government become clear.

The **likelihood** of political tension occurring is *high*. The effects of this will depend on a range of factors outside of Woodside’s control.

Mitigation Strategies

The August 2005 change of Government in Mauritania was unconstitutional and its implications are yet to be fully understood. The Government has declared its commitment to holding a series of democratic elections within the next two years. It has reinforced this commitment by indicating an intention to reform the electoral process and conduct elections within 19 months. This plan has the potential to mitigate the impact.

Woodside’s influence over the public’s perceptions of anticipated oil revenues is somewhat limited. Clearly it is the role of the Government and not of Woodside to make national policy or decisions regarding the ultimate manner in which the oil revenue is managed. Woodside can however, assist in the promotion of transparency and support the Government in discussions of revenue management strategies with stakeholders. It is assumed the Government will adopt transparency standards in respect to public sector finances.

Woodside has a minor role in supporting Government actions to mitigate the impact and will:

- Fulfil its reporting requirements in accordance with its endorsement of the EITI.
- Ensure that the Communications Plans for the Project include accurate information on the scale of the Project and timing issues associated with revenue.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.3.5

Creation of Political and Social Tension In Relation to Oil Revenue Management

As is described above, once the revenues do begin to flow to the Mauritanian Government, perceived or actual mismanagement of those revenues can become a source of national social or political tension as people struggle to increase their degree of influence over the distribution or application of that revenue. This impact becomes negative if these tensions result in unconstitutional events or civil unrest.

This impact is **indirect** and relates to the **operations** phase.

Impact Evaluation

This impact is **negative** and affects the Government and political representatives and the national population.

The **severity** of the impact is described below:

- *Duration of the impact is medium-term* given that oil revenues will require management for the duration of the Project.
- *Extent of the impact will be national* with every individual potentially affected by civil unrest or unconstitutional change.
- *Manageability of the impact is variable* and dependent on the Government's capacity to implement electoral reform, transparency commitments and effective budget management.
- *Ability to adapt is medium.* The Government's success in attracting investment, ongoing commitments to poverty reduction, transparency and electoral reform is encouraging.

The **likelihood** of political tension occurring is *high*.

Mitigation Strategies

The Government has put in place its own plans to mitigate this risk through increased democracy and transparency including its commitment to electoral reform and its intention to implement transparency initiatives. More recently the Prime Minister has announced that the elections would be held within 19 months of the establishment of the Military Council.

It is the role of Government to determine how revenues derived from the Project should be managed. It is expected that the Government of Mauritania will wish to make public its national priorities and budgetary program.

In support of Government initiatives Woodside will:

- Continue to assist the Government in its assessments of production and development costs, production profiles and revenues from the Chinguetti Project.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.3.6 Eventual Reduction in Revenues to the Government (Decommissioning)

Impact Identification

The direct impact to revenues during decommissioning is the mirror image of the positive impact when revenues begin to flow to the Government upon the commencement of operations. A significant revenue stream will be removed from the national public purse.

This is a **direct** impact that will arise during the **decommissioning** phase.

Impact Evaluation

This impact is **negative** and affects the Government of Mauritania and the national population. The **severity** of the impact is described below:

- *Duration of the impact* will be *long-term* depending upon the development of other resource projects that can replace the revenue flow.
- *Extent of the impact* of the impact will be *national*.
- *Manageability of the impact* of the impact is *low* as significant time will be required to assist in diversifying the economy.
- *Ability to adapt* is *low* due to the current lack of economic diversification and high need for poverty reduction.

The **likelihood** of the impact is *high*. The operations phase will end at which time the Project will enter the decommissioning phase, marking the end of revenues.

Mitigation Strategies

The economy will benefit from a coherent strategy for economic development and diversification. Long-range planning and consideration of revenue stabilisation tools will also bring benefits. The Government is also attempting to mitigate this impact by encouraging further investment in the hydrocarbons sector. This is primarily an issue for the Government, however, Woodside will:

- Report on revenues paid to the Government and revised projections for future production volumes.
- Work with Chinguetti Project JV participants to fulfil its exploration commitments and investigate tieback opportunities.
- Investigate the development potential of its other oil and gas discoveries in Mauritania.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.3.7 Eventual Reduction In Employment And Economic Activity (Decommissioning Phase)

Impact Identification

The decommissioning of the Chinguetti Project may increase the dependency on other natural resources (including iron ore extraction and fishing). This Project is the first field to be developed by Woodside. While this brings important local and national economic benefits, through employment, income and oil related revenues to the Government, it also raises the issue of

how the economy adjusts to the prospects of a decline in oil production towards the end of the Project.

Unless other fields are brought into production the natural decline of the Project will have an adverse impact on segments of the Mauritanian economy. This could result in an increase in unemployment in Nouakchott and a reduction in economic activity.

This is a **direct** impact that will arise during the **decommissioning** phase.

Impact Evaluation

This impact is **negative** and affects the national population, Nouakchott and existing and future employees and suppliers.

The **severity** of the impact is described below:

- *Duration of the impact* will be permanent (*long-term*) unless other hydrocarbon projects are developed in the interim period.
- *Extent of the impact* will be *national* as the reduced employment and economic activities will have flow on effects to the whole country.
- *Manageability of the impact* is *low*; the duration of the Project is uncertain which contributes to difficult in management. Furthermore the timing and success of other projects is also difficult to predict.
- *Ability to adapt* is currently *low* and will be dependent on the Government's capacity to invest in economic diversification and to identify alternative sources of revenue.

The **likelihood** of the impact occurring is *high*. The reserves will be depleted in time and the associated economic benefits will cease.

Mitigation Strategies

It is expected that Government agencies and institutions will consider ways in which further economic diversification can be achieved such that the economy is not at risk of collapse following the completion of oil production from the Project. Increased diversification in mining, fish and agricultural production and processing and ongoing promotion of oil and gas exploration acreage may provide the most achievable options.

To assist the Government in planning for this impact Woodside will:

- Prepare a decommissioning plan and discuss this with the Government and other stakeholders well in advance of the end of revenues.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.4 ROUTINE IMPACT: CREATION OF EMPLOYMENT

The Project will create three different types of employment. Direct employment is that which is provided by Woodside and its direct contractors. Indirect employment is created by expenditure on other goods and services by Woodside contractors. Induced employment refers to the jobs created in other parts of the economy as a result of expenditure on other goods and services.

5.4.1 Increased Direct Employment

Impact Identification

Direct employment is considered to include staff hired and under the immediate control of Woodside and employees of Woodside's direct contractors. The most visible economic effect of the Project is its employment requirement for drilling, construction and operations activities, both on and offshore. As of July 2005, the Project employed a total of approximately 1,500 workers. This represented the peak employment requirement over the whole life of the Project. Table 5.3 provides the direct peak employment figures for 2005.

Table 5.3 Direct Employment Profile (Peak) of the Project for 2005

Source of direct employment	Mauritania	Expatriate	Total
Woodside	40	31	71
Construction and rig related contractors	37	401	438
Goods and service contractors	935	40	975
Other		4	4
Total	1012 (68%)	476 (32%)	1488

Source: Woodside Mauritania Pty. Ltd.

Out of a peak workforce of approximately 1,500, 71 were Woodside employees with the rest employees of third party Contractors. Nearly 68% of the total workforce employed by the Project has been sourced from Mauritania with the rest made up of expatriate workers from a number of countries.

While the expatriate workforce consisted of only 32% of the total workforce in 2005, they occupied a majority of senior management and construction posts. Of the 1012 Mauritanian employees directly working on the Chinguetti Project, approximately 5% are skilled, 45% semi-skilled and 50% unskilled workers⁽³⁷⁾.

The majority of the local workforce is based onshore, working in Port and warehouse operations, as dock workers, in security operations and as watchmen, drivers, catering service staff, maintenance staff, mechanics and electricians, and cleaners. The proportion of local employment content in skilled jobs depends on the skills, experience and availability of Mauritians. At present, there are only a few Mauritians who have the requisite skills needed in the oil sector to take up skilled posts in the Project. All physical Project activities are either offshore (where the majority of the construction and drilling operations are taking place) or onshore in administrative, management and logistical operations in and around the capital, Nouakchott; and port related activities at Nouakchott Port. As a result, the geographical spread of employment benefits is limited to the Wilaya of Nouakchott.

In 2006 it is expected that direct employment, under the planned production profile, will fall to around 1300 workers, some of which will also support ongoing exploration effort. Employment levels from 2007 will be dependent on project and exploration requirements.

Most of the losses will be as a result of a reduction in construction and drilling operations and will mainly affect expatriate employees of the construction contractors. Based on these estimates, the proportion of Mauritanian employees is expected to increase to around 70% of the total by 2007.

The oil sector in Mauritania is still in its infancy, with the Chinguetti Project the first of its kind to come to production. Therefore other than to note that the Project currently represents the whole oil production sector in Mauritania, it is not possible to benchmark total employment generated by the Project against the potential overall employment in the sector. However, if compared to the total number of people employed by SNIM, the state mining company and one of the single largest employers outside the Government (around 7,500 workers), the direct employment impact of the Project is still relatively small.

⁽³⁷⁾ Estimated from interviews and information provided by Woodside Mauritania, Schenker Mauritania and SoGeCo

This impact arises during the **exploration & development** and **operations** phases. The impact is **direct**.

Impact Evaluation

This impact is **positive** and affects the existing and potential employees, families of employees and local and international contractors.

The **desirability** of the impact is assessed below:

- *Duration of the impact* will be *medium-term*; the duration of the Project.
- *Extent of the impact* will be *small*. Only relatively low numbers of Mauritians will be directly employed by the Project. However indirect and induced employment will be important (refer following section on indirect and induced employment).
- *Manageability of the impact* is *high* for direct employment given that it is within Woodside's control.
- *Ability to adapt* is *high*.

The **likelihood** of the impact occurring is *high*. Direct employment is already occurring.

Enhancement Strategies

Woodside will:

- Prioritise recruitment from Mauritania where possible and monitor performance of recruitment success.
- Establish targets for Woodside to maximise Mauritanian employment.

It is however important to note that a significant proportion of the employment opportunities relate to the indirect and induced employment opportunities associated with the Project. These impacts are discussed in the following section.

Residual Impacts

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.4.2 Indirect and Induced Employment

Impact Identification

Indirect Employment

Woodside purchases a range of goods and services (such as catering, provision of vehicles and drivers, logistics etc). Initial expenditure by Woodside to pay for these goods and services becomes revenue and income to contractors.

These contractors then make their own expenditures, creating secondary economic impacts. In this way, an initial injection of expenditure can be multiplied into a larger economic effect in the region and this creates extra job opportunities. This increase in (indirect) employment depends on the extent to which the expenditure is kept in the Mauritanian economy. At each round of expenditure, some money is lost to the Mauritanian economy to pay for goods and services that are imported. In addition, some money will be allocated to pay for taxes or saved. Only a proportion of money that is spent in Mauritania becomes available for expenditure in subsequent rounds of spending⁽³⁸⁾. As Mauritania's economy is small, not very diversified and self-sufficient, such leakages are greater than would be in a more diversified economy.

Interviews with the main contractors⁽³⁹⁾ revealed that on average, for every US\$1 spent by them, US\$0.60 will leave the economy as a result of expenditure on imported goods. While this leakage is likely to decrease further into the supply chain, the amount of expenditure in subsequent rounds also decreases. An indirect employment multiplier of 1.7 is estimated⁽⁴⁰⁾ meaning that for the same level of expenditure, the Project supports an additional 0.7 indirect job opportunity for every direct job

⁽³⁸⁾ it is expected that most of the benefits occur in the Wilaya of Nouakchott.

⁽³⁹⁾ Schenker and SoGeCc

⁽⁴⁰⁾ Marginal propensity to consume locally is 0.4, therefore the multiplier is estimated to be $1/(1-0.4)=1.7$

created⁽⁴¹⁾. This figure is an estimate, based on incomplete data on the economic linkages in the Mauritanian economy. The leakage has decreased from 80% at the start of the Project to 60% now, as more and more local Mauritanian companies are able to provide the services and goods needed for production and exploration⁽⁴²⁾.

As a result of the multiplier effects of the Project's activities on the supply chain, approximately 1,000 indirect jobs are created. The creation of new indirect jobs is a positive impact of the Chinguetti Project. This impact can be increased as the supply chain is developed further, over time, both naturally and as a result of pro-active policies of Woodside Mauritania and its Contractors.

This impact arises during the **exploration and development** and **operations** phases. The impact is **indirect**.

Induced employment

In addition to the indirect effects of the Project, there are also induced employment effects as a result of the income earned (via direct and indirect employment as a result of the Project) and subsequently spent in Mauritania.

The following assumptions are made to estimate the induced multiplier:

- Nouakchott's economy is the most diversified of all other regions in Mauritania and is therefore likely to capture a relatively higher percentage of the spending by Woodside employees;
- Expatriate employees are more likely to spend their income on goods and services that are imported when compared to local Mauritanian employees; and
- Wages paid by Woodside Mauritania are generally higher than the median wage in Mauritania.

Based on these findings, it is likely that the induced employment multiplier associated with the Project is estimated to be two⁽⁴³⁾. Therefore, as a result of the induced income effects, approximately 5,000 jobs are supported across the Mauritanian economy. However, it should be stated that because of data limitations, such estimates are in reality an educated guess.

This impact arises during the **exploration & development** and **operations** phases. The impact is **induced**.

⁽⁴¹⁾ Approximately 1500 direct jobs multiplied by 1.7 gives the cumulative total of direct and indirect employment of approximately 2500 ie. 1488 direct jobs and approximately 1000 indirect jobs

⁽⁴²⁾ Interview with Schenker

⁽⁴³⁾ If half of expenditure leaks from the economy, the multiplier is $1/(1-0.5) = 2$

Impact Evaluation

This impact associated with both indirect and induced employment is **positive** and affects the labour force of Mauritania, families of employees and business owners. The **desirability** of the impact is assessed below:

- *Duration of the impact* will be *medium-term*; for the duration of the Project.
- *Extent of the impact* will be *large*; the creation of indirect and induced employment will be significant.
- *Manageability of the impact* is *medium* for indirect employment and *low* for induced employment. Woodside has some influence over contractors but cannot control induced employment.
- *Ability to adapt* is *high*; the residents of Nouakchott will benefit from direct and induced employment.

The **likelihood** of the impact occurring is *high*; indirect and induced employment is already occurring.

Enhancement Strategies

The measures for enhancing the benefits of indirect and induced employment relate to management of the supply chain and social investment to encourage economic diversification. Woodside will:

- Require contractors to comply with Woodside's recruitment and employment policies and to achieve employment outcomes consistent with the localisation and training plans.
- Give preference to sourcing goods and services from local companies as long as they are equivalent in terms of price, delivery and quality – in accordance with the terms of the PSC.
- Monitor the proportion of locally sourced goods and services by product and service category and report on them.

Residual Impacts

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.4.3

Increase in Skills and Marketability as a Result of Employment on the Chinguetti Project

Impact Identification

As a result of direct employment on the Project, workers will gain skills that are particular to the oil sector as well as those that are transferable to other sectors. Skills will be acquired through training programs, work shadowing, learning by doing and through working in the context of Woodside standards on quality and health, safety and environmental measures. The scale of the impact will depend on the quality of the training program, the work experience and the incentive and desire to acquire new skills by the workers themselves.

This impact arises during the **exploration and development** and **operations** phases. The impact is **indirect**.

Impact Evaluation

This impact is **positive** and affects existing and future employees, employers in the oil and gas sector and other employers.

The **desirability** of the impact is described below:

- *Duration of the impact* will be *medium-term*, ie. for the duration of the Project, but the potential exists for other projects and industries where skills may be transferable.
- *Extent of the impact* will be *small*; the onshore activities will be restricted to Nouakchott and only a small proportion of the population will be involved with the Project.
- *Manageability of the impact* is *high*; employment generation and decisions to employ nationals are within Woodside's control. This will depend on Woodside's ability to manage expectations of the public towards the scale and type of employment opportunities.
- *Ability to adapt* is *high* by candidates for employment and job-related training and short-listed applicants who have been assessed as suitable for advancement within Woodside or initial employment in the industry.

The **likelihood** of the impact occurring is *high*. The workforce has already been mobilised and training programs have been established.

Enhancement Strategies

Measures to be adopted by Woodside to increase the skills and marketability of skills include:

- As far as practical, direct training efforts to ensure that the skills learnt can be equally applied to other industries.
- Continue to offer internships to develop skills, knowledge and experience of the Mauritanian workforce.

Residual Impact

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.5 ROUTINE IMPACT: DEMAND FOR SKILLED LABOUR

5.5.1 Provision of Training to the Mauritanian Government via GPC

Impact Identification

The relationship between the Government and the JV is governed by the PSC. It places obligations on Woodside to provide training for Government employees that will enable them to develop the capacity to better regulate and participate commercially in the development of the Mauritanian oil industry.

The training already provided to Government employees especially through working closely with Woodside staff during the EIA process for the Project. This has allowed them to develop a familiarity with the EIA standards typically adopted internationally as well as an understanding of environment management challenges faced by the oil industry and Government regulators. This knowledge is accumulating within GPC, the Department of Energy and Petroleum and to some extent within the Ministry of Fisheries and Maritime Economy (Directorate of Merchant Marine).

In addition, there are opportunities for skilled expatriate Mauritanians to return to the country and support not only the Chinguetti Project but other

developing industries. This impact arises during the **exploration and development** and **operations** phases. The impact is **direct**.

Impact Evaluation

This impact is **positive** and affects the Government employees.

The **desirability** of the impact is assessed below:

- *Duration of the impact* will be *long-term*, potentially beyond the duration of the Project.
- *Extent of the impact* will be *small* with few direct trainees but these individuals have potential to have a broader influence on environmental and socio-economic outcomes.
- *Manageability of the impact* is *high* since it requires some management but does not add any significant cost.
- *Ability to adapt* is *high*; participants have support of a Government employer.

The **likelihood** of the impact occurring is *high* – it is already occurring and will continue.

Enhancement Strategies

Woodside will:

- Support the development of the Government’s capability to regulate and manage environmental and socio-economic issues.
- In addition to formal teaching and on-the-job training, demonstrate best practice social and environmental techniques when dealing with the Government.

Residual Impact

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.5.2

Provision of Training to Mauritians by Woodside

Impact Identification

The skilled workforce in Mauritania is very small, largely as a result of lack of diversity in the economy. In addition, opportunities for vocational training are limited.

However, there is a need for adequately trained staff to fill positions in the Project that are currently occupied by expatriates. Woodside intends to provide education and training to increase the opportunities for Mauritians to participate in the Project and therefore increase overall capacity to provide employment to the oil industry as it develops.

There is a mismatch between the skills of those entering the labour market and that required for the available opportunities in the Project. As a result of this mismatch, the existing and potential employees will require and seek training in order to acquire the requisite skills.

This impact arises during the **exploration and development**, and **operations** phases. The impact is **direct**.

Impact Evaluation

This impact is **positive** and affects existing and future employees and trainees and other employers. The **desirability** of the impact is:

- *Duration of the impact* is likely to be *long-term*. Once the training is provided, those trained personnel can apply their training to all future employment situations, including those that occur subsequent to the operations phase of the Project.
- *Extent of the impact* will be *small*. It will only occur within Nouakchott, involving only the local workforce employed for the Project and their families.
- *Manageability of the impact* is *high* since it requires some management that does not add any significant cost.
- *Ability to adapt* is *high*. Local labourers and their families directly benefit from the listed improvements.

The **likelihood** of the impact occurring is *high*.

Enhancement Strategies

Localisation of positions directly employed by Woodside and its FPSO key contractor, Bergesen, will be the key to optimising local employment. Key strategies are outlined below.

- Train Mauritanian nationals in numbers marginally in excess of those required immediately on the Project, where practical and where appropriate candidates exist.
- Continue vocational training to increase the number and skill levels of Mauritanian nationals:
 - Develop capacity within the national oil company to work in the oil sector;
 - Provide training for watchmen and drivers on issues of security and safety (successful trainees receive certificates attesting their achievements according to international standards);
 - Provide access to language lessons (English, French and general literacy courses); and
 - Provide access to training in computing skills.
- Require contractors to submit a plan in support of the objectives of Woodside Mauritania’s localisation and training plans.
- Pool training budgets with contractors and other employers for more effective and efficient training of staff by appropriate third parties.
- Work with industry to support the Government’s efforts to enhance the technical training sector.

If mitigation strategies are implemented the duration of the impact should extend beyond the life of the Project. The number of potential participants is quite small, however careful and transparent selection should ensure that the impact is optimised.

Residual Impact

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.5.3

Movement of Skilled Workers to the Oil Industry

Impact Identification

The availability of relatively well-paid jobs in the Project may lead Mauritanian local professionals such as professors, teachers, engineers, doctors, and nurses to seek alternatives to employment in the public sector, even in unskilled positions. This may lead to difficulties in providing key services and other activities. Such a “migration” of poorly paid professionals into better paid semi or un-skilled jobs has been documented in other parts of the world. It should be noted that such a re-allocation of labour resources is normally a positive impact, as it implies the reallocation of resources from a less productive sector, thus enhancing productivity and output. Therefore the impact is only negative when the cost of not being able to offer public services exceeds the gains of higher productivity.

There are perceptions that a large proportion of skilled employees will leave existing employment in Mauritanian industry for the oil sector.

This impact arises during the **exploration and development** and **operations** phases. The impact is **indirect**.

Impact Evaluation

This impact is **negative** and affects the business community in Mauritania and skilled labour force.

The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term* as skilled migrants and expatriates will be attracted to direct employment opportunities on the Project.
- *Extent of the impact* will be *large* because there are relatively few direct employment opportunities suitable for Mauritanian nationals without training, however, with 7,500 additional jobs being created (1:100 of the Nouakchott population) there is scope for a career change for many Mauritians, particularly those within Nouakchott.
- *Manageability of the impact* is *low* due to the lack of control by Woodside of public sector wages and conditions and the wage rates paid by induced employment.
- *Ability to adapt* is *high*. Local employers have previously brought in expatriate workers from neighbouring counties such as Tunisia and Senegal, and the Government has raised the salaries of essential key workers to keep them in line with private sector increases.

There is unlikely to be a large overlap between the skills and experience required by an oil project and the abilities of the existing Mauritanian workforce.

The **likelihood** of the impact occurring is *medium*; it is foreseeable that the impact will occur, but it is not certain.

Mitigation Strategies

The Government may wish to engage the business community to minimise a movement of skilled labour from other sectors to the oil sector through selective skilled migration, flexible pay structures and training.

Woodside will:

- provide remuneration for its employees typically not exceeding the top quartile (rather than in excess of market rates).

Along with its contractors, Woodside will also:

- implement localisation and training plans aimed at increasing capacity in the local labour market.

It should be noted that Woodside’s level of influence is limited with regards to promoting salaries or employment conditions in other sectors of the economy, such that people are not automatically tempted to leave their existing employment for an opportunity within the Project.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.5.4 Increased Social Tension Due to Perceptions of Employment Inequality

Impact Identification

Direct employment of Mauritanians by Woodside and its contractors is a positive impact of the Project. However, the extent to which employment

benefits accrue to Mauritians depends on the effectiveness of Woodside Mauritania's hiring policy and processes.

Depending on who benefits from employment and the perceptions of fairness of the hiring process, there may be an increase in social tension between those Mauritians who have been employed by Woodside Mauritania and those who have not.

Consultations with stakeholders and Mauritanian Woodside employees have revealed some resentment and misperceptions of Woodside policy and practices on employment. For example, some workers have voiced concern over the fact that Woodside has contracted out the provision of some services (such as drivers and watchmen) to intermediaries, who then recruit local Mauritians to work on the Project. In several instances this practice has been referred to as "tâcheronat", a negative term used to describe a "jobber" who employs menial labourers.

This tension is as a result of perceived inequalities between working conditions and benefits offered by Woodside and those provided by its local contractors. Woodside's local employees are paid a market competitive remuneration and receive non-monetary benefits such as meals allowances and health benefits for themselves and their families. However, these working policies are not uniformly available to those people working for Woodside Mauritania's contractors. The issues raised by employees of contractors include a lack of accommodation available when drivers are resting at the driver's depot, lack of drinking water availability and lack of shade whilst waiting for work.

Woodside employees have relatively higher wages in comparison to other sectors (wages are on average in the 75th percentile).

Such a disparity may lead to a tiered hierarchy made up of people who work on the Project and those who do not, an example of the hierarchy could be as follows:

1. Expatriates that work for the Project;
2. Nationals that work for Woodside direct;
3. Nationals that work for contractors associated with the Project; and
4. Nationals that do not have employment associated either directly or indirectly with the Project.

There may also be tensions between local and foreign employees based on actual or perceived inequalities in remuneration and service conditions and misperceptions of Woodside's recruitment policies towards hiring expatriates. Expatriates are paid a much higher wage with benefits such as pension, health care and housing. In addition, expatriate workers are more likely to be in technical or managerial jobs than local people. These

disparities may lead to frustration and resentment among local Mauritians – especially the young and university educated. This is based on a lack of information (as it is unlikely that an expatriate is employed in a job that could be filled by a Mauritanian) and high expectations of obtaining work at Woodside’s operations. In the context of extreme poverty, there is a fine line between operation of an efficient market using enterprising intermediaries such as “tâcheronat” and exploitation of workers with little hope of gaining meaningful market information.

This impact arises during the **exploration and development**, and **operations** phases. The impact is **direct**.

Impact Evaluation

This impact is **negative** and affects the existing and future Woodside employees and key contractors.

The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term*; for the duration of the Project.
- *Extent of the impact* will be *small*. It will be limited to Nouakchott and it only affects the local workforce employed for the Project by Woodside’s contractors.
- *Manageability of the impact* is *medium* as it depends on Woodside’s ability to influence its suppliers to adopt higher labour standards.
- *Ability to adapt* of the local population is *medium*. It is reduced due to the limited power of unions, but is increased through government scrutiny of performance against PSC obligations.

The **likelihood** of the impact occurring is *high*.

Mitigation Strategies

Woodside will:

- Include information on Woodside’s recruitment and contractor selection practices and rationale in the Project communication plan.

Mitigation strategies will assist in lowering the severity of the impact by reducing the extent of the impact and adopting a pro-active approach in managing the issue.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.5.5 **Creation of Tension between Mauritanian Nationals and the Expatriate Workforce**

Impact Identification

The general increase in tension due to perceptions of employment inequality is discussed above. Potential resentment towards expatriates from nationals is associated with both employment inequality and other social and cultural differences.

The Project has raised expectations of increased employment in Mauritania. As a result the number of people applying or inquiring about work is likely to be higher than the number of jobs actually available.

While the mobilisation of the workforce for the Project has had a positive impact on job creation, the number is not likely to increase by much in the medium term as the proportion of local employment content is constrained by the lack of skills⁽⁴⁴⁾. As a result, unsuccessful applicants may feel frustrated and resentful of expatriate workers who may fill the posts.

This impact arises during the **exploration and development**, and **operations** phases. The impact is **indirect**.

Impact Evaluation

This impact is **negative** and affects the community of Nouakchott and expatriate and other Woodside employees.

⁽⁴⁴⁾ Woodside Mauritania has stated in its employment policies that it will seek to raise the level of local content over the course of the project. If recruitment goals are met, the proportion of local employment content will increase.

The **severity** of the impact is described below:

- *Duration of the impact is medium-term*; it is anticipated to disappear over the life of the Project.
- *Extent of the impact is small*. The use of expatriates is an established phenomenon in Mauritania. The number of expatriates associated with this Project is relatively small and less visible than the aid organisation/NGO community.
- *Manageability of the impact is low* because resentment of an expatriate workforce by the local community is a complex social phenomenon.
- *Ability to adapt is high* because there is already a relatively high expatriate presence associated with other sectors such as fishing and mining.

The **likelihood** of the impact occurring is *low*. It is possible that this impact could occur, but given the overall benefits associated with the Project and low visibility of expatriates within the community, it is probably unlikely.

Mitigation Strategies

Woodside will:

- As far as practical, actively seek to localise the Project workforce whilst employing on merit.
- Educate both the national and expatriate direct workforce regarding cultural differences and sensitivities.
- Articulate individual behavioural expectations in (Code of Conduct) performance agreements and management reviews for direct employees.

Mitigation strategies will provide Woodside with experience in managing this issue, which will increase the ease with which this impact is managed over time.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.6

ROUTINE IMPACT: DEMAND FOR GOODS AND SERVICES

5.6.1

Increased Demand for High Quality Housing

Impact Identification

Woodside and its contractors currently employ approximately 500 expatriate staff and will maintain that level during the Operations phase of the Project. About two-thirds of the expatriates (principally Australian and European) are stationed offshore and require only transit accommodation. Woodside has had six such blocks housing 41 people in total.

Permanent expatriate workers have been housed in 24 privately-guarded rented dwellings scattered throughout the neighbourhood of Tevragh Zeina in Nouakchott. Direct contractors occupy around another 10 houses.

Foreign personnel have higher standards of living than most Mauritians. Although Woodside's (and contractor's) demand for housing is limited, this has increased demand for higher quality housing. Moreover, since 2001, Woodside has paid over the average rental price for housing. Woodside management has observed an increase of at least 40% from 2001 to 2005 in nominal rents – approximately 10% per year. In context this is a moderate increase. Land speculation has historically been high in Nouakchott and annual increases were 20 to 30% in the mid to late 1990s⁽⁴⁵⁾. Given an inflation rate in the range 5 to 15% over the last three years, the real rise is very modest.

This impact arises during the **exploration and development** and **operations** phases. The impact is **indirect**.

Impact Evaluation

This impact is **negative** and affects the community of Nouakchott.

As the foreign workforce peaked in 2005, most of the impact related to demand in housing has already occurred.

As the higher standard houses are concentrated in the wealthiest municipality of Nouakchott, Tevragh Zeina, the impact is limited to that area and may affect upper-class Mauritians living or wanting to move to that municipality. Increases in rents of high quality housing may be passed on to upper-middle-class housing and to other communes in Nouakchott, in particular other well-off neighbourhoods, such as in Ksar.

⁽⁴⁵⁾ SDAU 2003

There is little likelihood that additional demand for high quality housing will impact on prices in the poorest areas of the city.

The **severity** of the impact expected is comprised of:

- *Duration of the impact* will be *short-term* as demand for high quality housing has already peaked and therefore the effect has mostly already been felt.
- *Extent of the impact* will be *small*; it will principally be within the Commune of Tevragh Zeina in Nouakchott.
- *Manageability of the impact* is *high* as the property market is sufficiently developed to detect and address any shortage.
- *Ability to adapt* of the local population and landowners is *high* as other accommodation options are available and investment opportunities are relatively familiar.

The **likelihood** of the impact occurring is *high*, but the precise contribution of the presence of Woodside’s and its suppliers’ foreign workforce is uncertain.

Mitigation Strategies

Acknowledging that the majority of this impact has already occurred and that it affects a relatively small number of people, the main mitigation strategy for addressing the potential for increases in property speculation and rents that will be adopted by Woodside is:

- Continue to liaise with parties associated with housing supply to set more realistic expectations of Project demand going forward.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.6.2

Increased Expenditure and Local Economic Development

Impact Identification

Chinguetti Field Development

Woodside expenditures in Mauritania relate to two categories; those related to oil field development and operation and those related to onshore, non-oil field expenditures. For both categories, there are capital and operating expenditures. This section discusses the expenditures related to the development and operations phases of the Project.

During the development phase of the Project, Woodside is expected to spend nearly US\$750 million in capital expenditures to develop the offshore oil field. The majority of this is expected to have been spent by the end of 2005.

There are a number of existing Mauritanian or Mauritanian registered companies that benefit directly from increased business as a result of Woodside's direct procurement of goods and non-employment related services. These include Schenker, SoGeCo, COMACOR, MKT and A&A Cleaners. Most of these companies are located in Nouakchott. However, a large percentage of these expenditures will go towards imported inputs as the economy is not diversified enough and does not have the appropriate economic linkages to retain all the benefit from increased economic activities as a result of the procurement.

Total operating expenditures incurred by Woodside in 2004 amounted to nearly US\$16.6 million⁽⁴⁶⁾. This is in addition to spending by Woodside related direct and indirect employment. Although the contracts are with Mauritanian based or registered companies, as explained in the section on indirect employment effects, not all of this will be spent on locally sourced goods and services. At present, the capacity of local firms to participate in the supply chain is limited, with only 40% of total expenditures retained in Mauritania. These expenditures result in increased economic activities that pass through Nouakchott to the national economy through the supply chain of the contractors and spending by employees.

This impact has arisen during the **exploration and development** phase.

Operations Phase

From 2006 when the field starts production activities, Woodside will start incurring oil field operating expenditures. This is estimated to be on average between US\$80 to \$90 million per year, based on current production forecasts.

⁽⁴⁶⁾ Estimated using information from Woodside Mauritania, including exploration and development activity.

However, very little of the capital or operational expenditures incurred as a result of the oil field development will be retained in the Mauritanian economy. Almost all equipment, materials and labour needed for the construction and maintenance of the oil platform will be imported as the oil sector is currently not developed enough to capture these expenditures. Workers on the offshore facilities will also be dominated by expatriate workers until such time as training plans result in a substantial nationalisation of the crew. In addition to these offshore oil field related expenditures, the Project provides direct procurement opportunities for Mauritanian companies. Woodside operating expenditures, as a result of the procurement contracts, relate to the following activities:

- Catering and other minor services;
- Support vessel services;
- Charters;
- Construction (eg office modifications);
- Infrastructure lease payments;
- Well mobilisation logistic;
- Minor capital expenditures;
- Customs clearance and freight forwarding services;
- Lease arrangements (houses and offices);
- Provision of vehicles and drivers;
- Cleaning, maintenance and security; and
- General office expenses.

This impact is both **indirect** and **direct**. It arises during **exploration and development, operations** and **decommissioning** phases.

Impact Evaluation

This impact is **positive** and affects the local and international contractors and businesses and the community of Nouakchott. The **desirability** of the impact is described below:

- *Duration of the impact* will be *short-term* in relation to the exploration and development phase and long term in relation to the operations phase.
- *Extent of the impact* will be *large* during the exploration and development as well as the operations phase, the onshore activities will be in the Wilaya of Nouakchott. This Wilaya contains the greatest concentration of businesses and population in Mauritania.
- *Manageability of the impact* is *high* as a significant component is within Woodside's control. The relative manageability will depend on

Woodside’s ability to manage expectations of the public towards the scale and type of business opportunities.

- *Ability to adapt is low to medium.* It is expected that it will be difficult for many local suppliers to have necessary pre-qualification.

The **likelihood** of the impact occurring is *high*. Local procurement is already occurring and is expected to continue for the duration of the Project. The impacts will be large and positive for those affected, but for a relatively small proportion of the overall population and business community, particularly during the exploration and development phase. Mitigation strategies will increase adaptability of local business and therefore improve overall desirability.

Enhancement Strategies

Woodside will:

- Work with local businesses to increase the likelihood of goods and services being procured locally rather than imported.

Residual Impact

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.7 ROUTINE IMPACTS: ADDITIONAL DEMAND FOR INFRASTRUCTURE

5.7.1 Increased Pressure on Social Infrastructure

Impact Identification

Migrants are being attracted to Nouakchott in the hope of obtaining employment with the Project, or elsewhere in an expanding Mauritanian economy, partly being driven by the Project. This phenomenon has been the case with other oil projects in Africa (Nigeria, Chad, Cameroon).

Nouakchott is already growing rapidly and in many areas without adequate planning controls to allow for provision of key infrastructure. The majority of new arrivals come from rural areas where they could not easily sustain themselves through agriculture. These immigrants, although willing to take low paid jobs, suffer from high poverty levels and poor health outcomes. This is particularly true for residents in the moughattas of El Mina, Sebkha, Riyad, Toujounine and Dar Naim.

It is likely that immigrants' perceptions of employment opportunities associated with the Project may not reflect the actual jobs available (only 0.1% of the Nouakchott population can expect to find employment with Woodside or its contractors) resulting in immigration of greater numbers than there are employment opportunities. The presence of these immigrants in Nouakchott will place additional pressure on already inadequate infrastructure.

It is expected that further migration into Nouakchott, and especially to the moughattas listed above, may result in:

- *Increased pressure on housing and hard infrastructure.* Many live in shanty areas with no urban planning and no sanitation, waste or water services. Migrants staying with extended families will add to crowding and public health problems.
- *Increased pressure on social infrastructures.* Schools (particularly at the primary level), hospitals, health centres and health posts are functioning with limited qualified staff and equipment.
- *Worsening public health situation,* resulting in rising levels of diarrhoeal diseases and intestinal parasites.

This impact arises during the **exploration and development phase** and continues into the **operations phase** and to a lesser extent, the **decommissioning** phase. The impact is **induced**.

Impact Evaluation

This impact is **negative** and affects:

- economic migrants,
- host families of migrants,
- existing residents of suburbs where inadequate infrastructure threatens public health, and
- 'key workers' in public service provision: doctors, nurses, teachers, social support services and police.

The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term*; the life of the Project.
- *Extent of the impact* is *variable*. The Project's contribution to the existing strong trend of urbanisation is difficult to isolate. Given the existing pressures on infrastructure, any increase in local population will add to an existing problem.
- *Manageability of the impact* is *low* because the Project has little control over expectations of potential immigrants. However, given the recent high population growth in Nouakchott, inadequate infrastructure provision is already recognised as a significant issue and is a national priority.
- *Ability to adapt* for immigrants and existing residents is *low* due to existing overcrowding, poverty, poor health, poor service levels and lack of public services. The **likelihood** of the impact occurring is *high*. It has already happened to a degree and is more likely to occur than not in the operational phase.

Mitigation Strategies

Formation of realistic expectations will depend upon awareness-raising primarily among the Nouakchott community – and via them among relatives in rural areas and other cities. Families of hopeful migrants are likely to already be suffering from a lack of core infrastructure and inadequate housing. If they are aware of realistic prospects for employment, this will assist in the reduction of excess immigration.

Government has the lead role in setting migration policies for Mauritania and the planning and provision of infrastructure and services.

Woodside will:

- Provide the Government with accurate employment projections.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.7.2

Health and Environmental Risks of Waste Management

Impact Identification

During the exploration and the development phase, Woodside has stored significant quantities of waste, pending identification of appropriate management solutions. The types of wastes generated by Woodside's operations in Mauritania comprise:

- Urban wastes - waste resulting from the presence of Woodside (and sub-contractors) personnel;
- Non-hazardous industrial waste – waste arising from oil exploration and production activities and incineration of selected urban waste;
- Used oils, oily waste and oil combined with water are exported to a MARPOL Annex 1 receiving facility external of Mauritania; and
- Hazardous waste chemicals (including drums of liquid hazardous waste).

These are identified and listed in the Woodside Mauritania Waste Management Plan drafted in September 2004.

In accordance with Woodside's interim waste management plan, these wastes are being avoided or sorted and stored for future recycling and treatment. Currently, treatment is limited to the combustion of urban waste in a container converted into an incinerator and located in a waste transfer facility near the Port. Combustion by this method, while relatively high-tech by current Mauritanian practices, is unlikely to conform to accepted international standards. In particular, the incinerator releases highly visible emissions during the combustion, especially on initial ignition. The visible emissions create perceptions of health risks, particularly for those that frequent the area.

This impact arises during the **exploration and development** and **operations** phases. The impact is **indirect**.

Impact Evaluation

This impact is **negative** and affects:

- Contractor employees working at the current Schenker-operated transfer station; and
- Residents of the communities closest to the transfer station.

The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term*; lasting for the duration of the Project.
- *Extent of the impact* is *small* given the small amounts of waste burnt, the small number of workers in the facility (2 to 3) and the distance from other people. The facility is not at a culturally sensitive site or recreation area.
- *Manageability of the impact* is *medium* due to the significant costs involved in the modification of the current transfer station and the challenges of identifying alternative sites.
- *Ability to adapt* to the perceived risk is *high* for employees assigned to the transfer station when personal protective equipment (PPE) is used and given a safety policy exists that allows work to stop if there are unsafe work conditions. Uncertainty exists as to the capability of the closest residents to seek answers to any concerns they have about air quality.

The **likelihood** of a perception of a significant risk developing is *low* given poor ambient air quality in Nouakchott, the distance of residences from the facility and the short operational duration of the incinerator.

Mitigation Strategies

Leadership in mitigating this impact rests with Woodside. Woodside has implemented a procedure for disposal of bulk oily waste and undertaken a detailed review of existing waste management practices and has identified opportunities for improvement. Woodside will:

- Finalise its waste management plan in 2005 to take account of the Chinguetti operations phase and continued exploration activity.
- Implement changes arising from the new waste management plan.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.7.3

Port Congestion

Impact Identification

Mauritania is highly dependant upon imported basic foodstuffs, similarly, nearly all manufactured goods are also imported by sea. Delays to food aid at the Port en route to the interior of Mauritania or Mali could have a large cost in terms of human suffering, particularly in periods of food scarcity.

Eight companies operate at the Port, including SoGeCo/GMLP—one of the main operators—and Schenker, both of which are under contract with Woodside.

There was a rapid increase in port traffic between 2003 and 2004, with imports reaching 1.4m tonnes in 2004. The Port's 1999 development plan⁽⁴⁷⁾ planned to build a new berth if the volume was to reach 1 million tonnes⁽⁴⁸⁾.

However, data from the Port Authority suggest that waiting times and berth occupancy are not directly related. For example, in 2004, occupancy rate at Berths One, Two and Three, were respectively of 40%, 37% and 60%, whereas the average waiting times were respectively 9, 27 and 29 hours. Furthermore, there is no pattern in peak periods over the years. Woodside currently uses the Nouakchott Port exclusively for imports and supply of offshore vessels. Woodside's use of the Port represented approximately 6% of total port activity for the ten months to October 2005, as follows:

- Nearly 80% exploration and offshore construction material and equipment; and
- About 20% goods for use in Woodside day-to-day activities, ie. food, office supplies (10% consumables for the office and 10% food and beverage imported through Schenker).

In the first half of 2005, around 14 boat movements (daily return trips) per week were made to and from the offshore sites with construction materials.

Woodside's operations manager has worked closely with the Port Authority to ensure smooth planning and operations. No complaints or issues have been reported.

During operations shipping movements are expected to fall to 4 to 8 movements per week from current levels of approximately 14 movements per week.

This impact arises during the **exploration and development** and **operations** phases. The impact is **direct**.

⁽⁴⁷⁾ *Plan Directeur d'Aménagement du Port, 1999*

⁽⁴⁸⁾ Interview with Port Authorities, June 2005

Impact Evaluation

This impact is **negative** and affects the port users and national population reliant on food aid.

Congestion has not been a significant issue to date; Port facilities are being upgraded and the relationship with the Port Authority is positive.

The **severity** of the impact is described below:

- *Duration of the impact* will be *short-term*. Congestion can happen only at peak times.
- *Extent of the impact* is *small*. Delays are largely limited and controlled
- *Manageability of the impact* is *high*, particularly given the successful track record in delaying Woodside traffic when peak volumes occur.
- *Ability to adapt*, and recover from a delay to unloading and loading, is likely to be *high*.

The **likelihood** of the impact occurring is *low*. The impact has not been experienced to date. It is understood the Port has long term land use planning and administration processes that will prevent land use conflicts arising and will protect the investment in infrastructure at the Port.

Mitigation Strategies

Woodside will:

- Engage with the Port Master in planning traffic movements, land use and administration to allow for continued and enhanced port operations.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.7.4

Increased Traffic Volumes and Road Traffic Accidents

Impact Identification

The roads in Nouakchott are in poor condition, as are the majority of vehicles on the road. Traffic flow controls are limited and the number of cars on the road is increasing rapidly. A driver's licence can easily be bought illegally, and there is little adherence to safety practices (ie. wearing of seat belts, abiding by speed limits, keeping to the right-hand side of the road). As a result traffic accidents are a frequent problem in Nouakchott, with roughly 10 to 12 injuries and 5 to 7 fatalities per day.

The exploration & development phase has marginally increased light road traffic levels principally due to movement of personnel within Nouakchott including the Port and International Airport. Nouakchott traffic general moves slowly, however any accident involving one of the Woodside fleet of 4WD vehicles would have serious consequences for the other vehicle. Woodside puts its drivers through rigorous driver training, has a policy of defensive driving and monitors breaches of the policy and near misses.

This impact arises during the **exploration and development, operations and decommissioning** phases. The impact is **direct**.

Impact Evaluation

This impact is **negative** and affects Woodside drivers, passengers in Woodside cars, other vehicle users and pedestrians.

The **severity** of the impact is described below:

- *Duration of the impact* will be medium-term lasting the duration of the Project, but the frequency will be rare and intermittent.
- *Extent of the impact* will be *small* given the relatively insignificant number of additional traffic movements. This assessment is supported by previous Woodside safety records and driver training.
- *Manageability of the impact* is *low* in the event of a serious accident but controls to prevent such events are already in place.
- *Ability to adapt* or recover from even a minor accident is *low* due to limited healthcare services, poor underlying health, low-income levels and poor income security.

In light of Woodside's ongoing driver training program, the **likelihood** of the impact occurring is *low*.

Mitigation Strategies

Several mitigation measures have been put in place and will continue to be adopted to ensure that traffic accidents involving Woodside vehicles are kept to a minimum.

Woodside will also:

- Continue driver training programs for staff drivers and its policy of escorted travel of untrained drivers in Woodside vehicles.
- Continue to monitor and enforce road safety standards expected of Woodside employees and contractors.
- Demonstrate road safety awareness through implementation of Woodside safety policies.
- Investigate with the Government road agency the potential to improve safety in areas subject to increased traffic as a result of Project activities, in particular:
 - regular road maintenance;
 - traffic management; and
 - policing of driver standards by the local authorities.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.8 ROUTINE IMPACT: CHANGE IN SOCIAL PATHOLOGIES

5.8.1 Increased Social Pathologies

Impact Identification

An influx of workers, typically young and male, associated with development and construction projects can lead to an increase in social

pathologies such as anti-social behaviour, alcohol and drug abuse and demand for prostitution. The associated effects include an increase in communicable diseases such as STDs and HIV/AIDS. This is especially the case when these men do not have social ties to the receiving community.

The degree to which the Chinguetti Project may give rise to an increase in social pathologies takes account of the following:

- There are strong legal restrictions and cultural morals in place which discourage some of the potential social pathologies - prostitution is illegal in Mauritania and drinking and drug use may give moral offence.
- The Project's direct residential workforce is relatively small.
- The majority of people employed on the Project are long-term residents of Nouakchott and thus are expected to have strong family ties. There is a small expatriate workforce associated with project which is rotated in and out of Mauritania and therefore has few links into the community.

Despite the Government's strong stance on preventing or avoiding these social pathologies, and the relatively low incidence rate (for example, the incidence of HIV/AIDS in Mauritania - and Nouakchott - is low in comparison to the other countries in Sub-Saharan Africa, as is the prevalence of STDs) there is concern amongst NGO's about the health-related issues. Several health organisations in Mauritania are concerned that HIV/AIDS is already a key healthcare problem⁽⁴⁹⁾. The WB is currently investing US\$19 million in AIDS programs in Mauritania in recognition of the potential issue.

Any increase in these pathologies has the potential to have an impact on the incidence of communicable diseases. Any increase in the frequency of prostitution will tend to lead to a rise in sexually transmitted diseases including HIV/AIDS. Risky behavioural practices are common, with many commercial sex workers not using condoms and having multiple partners per day. This practice is likely to lead to transmission of HIV/AIDS, Hepatitis B and C, and other STDs within the local community in Nouakchott and potentially into communities living in other areas.

This impact arises during the **exploration and development, operations and decommissioning** phases. The impact is **induced**.

Impact Evaluation

This impact is **negative** and affects the direct expatriate workforce, immigrant workers, families of immigrant and expatriate workforce, commercial sex workers, other clients of commercial sex workers and health practitioners.

⁽⁴⁹⁾ SOS Pair Educateurs, 2005

The **severity** of the impact comprises:

- *Health outcome is moderate* and any injuries resulting from alcohol or drug abuse or incidence of STDs will require treatment and potentially hospitalisation. Any case of HIV/AIDS would result in a *severe* health outcome as it will result in loss of life.
- *Duration of the impact is medium-term* lasting the duration of the Project.
- *Extent of the impact will be localised* as it will be confined to a small proportion of the population in Nouakchott with exposure to the Project workforce.
- *Manageability of the impact is high* for workers employed directly by Woodside but *medium* for those employed by contractors. There are well established methods for policing prostitution.
- *Ability to Adapt is high* in terms of prevention of anti-social behaviour, alcohol and drug abuse and prostitution and treatment of common STDs but *low* in dealing with HIV/AIDS. The very basic healthcare system, poor supply of antiretroviral drugs, under-reporting and cultural difficulties in communicating safe sex messages to commercial sex workers, are barriers to PAP adapting to an increased incidence.

The **likelihood** of the impact occurring as a result of the Project is *medium*.

Mitigation Strategies

The Government of Mauritania, NGOs and IGOs are actively involved in the management of the issues described above and will continue to take responsibility for leadership in this area.

The Project is committed to avoiding contributing to an increased demand for commercial sex workers and the transmission of HIV/AIDS due to the presence of the workforce. In order to minimise the potential impacts, Woodside will:

- Provide additional recreational and social activities and French and Arabic language programs for staff and contractors.
- Provide health awareness training to the direct workforce including a significant briefing on risks of alcohol abuse, drug use, transmission and prevention of communicable diseases such as HIV/AIDS, the importance of safe sex, avoidance of unwanted pregnancies.
- Brief the workforce on expected standards of behaviour and enforce zero tolerance policy on prostitutes in Woodside accommodation. This means instant removal from Mauritania of the offending expatriate contractor or staff member.

- Promote voluntary counselling and testing for HIV/AIDs and STDs within the workforce and their families.
- Make condoms available without charge in accommodation and encourage contractors to do likewise where applicable.
- Implement strategies to minimise the Project’s requirements for expatriate workers.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

The suggested mitigation measures if implemented appropriately will limit social pathologies as a result of the Project. As the majority of STDs are curable the residual impact is expected to be minor. However, the residual impact for HIV/AIDS (and Hepatitis B and C) is estimated to be moderate given that no cure exists, access to treatment is difficult and expensive.

5.8.2 Increased Health, Safety and Environmental Professionalism in Workplace Culture

Impact Identification

Woodside has high health, safety and environmental (HSE) standards that it applies to all its activities, including that of its contractors in Mauritania. Workers on the Project are briefed on these policies before starting their jobs and responsible actions are reinforced by ongoing training. This increased understanding and professional occupational health and safety (OHS) management has the potential to influence standards and safety behaviours in the wider economy. While this impact is not categorically related to social pathologies because it does influence the behaviours of people, it has been included in this section of the report.

This impact arises primarily during the **exploration and development and operations** phase. The impact is **induced**.

Impact Evaluation

This impact is **positive** and affects the direct and indirect workforce and families of workers.

The **desirability** of the impact comprises:

- *Duration of the impact* is *long-term*; likely to be beyond the life of the Project.
- *Extent of the impact* will be *small* but may increase over time. There are relatively few industrial workplaces nationally although other oil and resource projects may arise.
- *Manageability of the impact* is relatively *high* for the direct workforce but relies on the readiness of indirect and induced workforces and employers to change.
- *Ability to adapt* is *high*; HSE training has been successfully improved in similar greenfield oil developments elsewhere in Western and Northern Africa.

The monitoring of standards is already happening and influencing indirectly related workplaces. The **likelihood** of the impact occurring is *high*.

Enhancement Strategies

Woodside will:

- Provide continuous reinforcement training and monitor and report on HSE performance.

Residual Impact

		Likelihood		
		Low	Medium	High
Desirability	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.9.1 *Immigration Facilitated by an Improved Transportation Network*

Impact Identification

It is important to note that the road infrastructure projects mentioned below are not part of the Chinguetti Project. They have been assessed and approved via a separate process, unrelated to the Chinguetti oil field development.

The attractiveness to migrants of perceived employment opportunities in Nouakchott (partly induced by the Project) is reinforced by the commissioning⁽⁵⁰⁾ of 470km of the Nouakchott to Nouadhibou road⁽⁵¹⁾ and the 140km section of road between Rosso (on the Mauritanian boarder with Senegal) and Boghé⁽⁵²⁾ (a market gardening area to the east along the Senegal River Valley). These roads improve travel and communications with Nouakchott and facilitate permanent and daily migration into the capital. Increased flows of people along the road spreading knowledge of labour market conditions may assist in setting migrants' expectations of employment to more realistic levels, assuming their information is accurate.

The completion of a paved route between Lagos and Casablanca (by the Nouakchott to Nouadhibou section) will strengthen trade routes between sub-Saharan West Africa and Europe. Nouakchott and Nouadhibou will be more regularly exposed to cultural influences from the south and the communicable diseases more prevalent there (in particular, TB, malaria and HIV/AIDS). Single males isolated from both their community of origin and host community, in particular long-distance truck drivers, tend to engage the services of prostitutes more frequently and are therefore effective transmitters for the above diseases. Irrigation from the Aftout-Es-Saheli water project will reinforce the viability of spontaneous settlements south of Nouakchott and over-crowding in the southern municipalities.

The impact arises during the **exploration and development** and **operations** phases when the impact of economic migration into Nouakchott (induced impact) interacts with the easier movement across large distances (direct impact of the road opening). This may increase the **cumulative** incidence of immigration and associated public health and social pathologies.

⁽⁵⁰⁾ Expected to open October 2005

⁽⁵¹⁾ Article in *Le Monde*. « Nouakchott-Nouadhibou le chaînon manquant » 8 February 2005 ;

⁽⁵²⁾ Article: CHOPLIN A, Antil A., 2004. Le chaînon manquant : la route Nouakchott-Nouadhibou, dernier tronçon de la transsaharienne Tanger-Dakar. *Afrique contemporaine*, n°208, 115-126

Impact Evaluation

This impact is **negative** and affects:

- Immigrants;
- Existing residents of suburbs hosting migrant workers and suffering poor public health conditions; and
- Nouakchott social sector workers (eg. health care, police, waste).

The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term* lasting the life of the Project.
- *Extent of the impact* will be relatively *medium* and concentrated to specific areas of Nouakchott and perhaps some of the new informal settlements along the road both north and south of the capital.
- *Manageability of the impact* is *low* as prevention of excessive immigration is likely to require liaison with multiple stakeholders with influence over the formation of migrants' expectations and perhaps controls over the right to settle within Nouakchott.
- *Ability to adapt* is *low* given the levels of poverty among the existing community, and capacity constraints of current service provision.

The **likelihood** of the impact occurring is *high*. The Project is making a contribution to the flow of immigrants although this is likely to be relatively small in relation to other factors such as the drought and desertification. It is expected that the Government will wish to address issues of potential overcrowding.

Mitigation Strategies

Woodside will:

- Provide the Government with accurate information on Project labour requirements and employment conditions to assist them to communicate the realistic employment prospects available in Nouakchott to potential immigrants.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.9.2 Increased Costs to Business – Multiple Construction Projects

Impact Identification

The synchronisation of several major construction projects creates relatively high demand for skilled labour and construction material inputs, and to a lesser extent, capital for investment in businesses benefiting from induced impacts of construction procurement. Given the limited ability of the Mauritanian economy to expand its supply of these inputs, there is likely to be inflation unless the supply can be fulfilled by expatriate workers and imports from other countries.

Projects in the construction phase include:

- *Aftout-Es-Saheli water project*⁽⁵³⁾

This US\$220 million project to divert water from the Senegal River aims to satisfy all water needs of Nouakchott until 2030. The four-year civil works program (2005 to 2009) will include the construction of water intake facilities on the Senegal River at Aftout, 200km from Nouakchott. The construction of treatment plants, pumping stations, a reservoir and the installation of water transmission pipes will provide a connection to the existing distribution system.

- *Nouadhibou – Nouakchott road*

This US\$72 million project will complete four sections of road between Mauritania's capital and the country's principal bulk export port city. Full commissioning is due towards the end of 2005.

⁽⁵³⁾ Source : http://www.opecfund.org/news_press/2005/pr58_2005.aspx (58/2005 June 1, 2005, Vienna, Austria)

- *Rosso-Boghe road project*

This US\$27 million project to complete a 140km road link between Boghé⁽⁵⁴⁾ (in a market gardening area on the northern banks of the Senegal River) and via Rosso (on the Mauritanian border with Senegal) to Nouakchott and Senegal.

- *Nouakchott municipal land-fill project*

The Government and the WB are actively developing a landfill facility for operation by the nine municipal authorities of Nouakchott via Communité Urbaine de Nouakchott (CUN).

- *Resource extraction projects – iron ore, gold, copper and oil*

Prospecting, exploration, evaluation of reserves and feasibility studies are occurring on several projects simultaneously. Typically, these projects require specialists brought in from overseas, but locally-provided support to exploration and feasibility studies include accommodation, food, transport, entertainment, security and telecoms needs. The support for indirect and induced employment will make migration to Nouakchott more attractive.

The impact arises when the Project's required inputs (**indirect** and **induced** demand) overlap with the goods and services these other large projects require for completion. The impact will occur in the **operations** and, to a lesser extent, the **decommissioning** phases. The effects of synchronisation of procurement are growing inflationary pressures in the Mauritanian economy. This **cumulative** impact is greater than the sum of individual project expenditures when total procurement exceeds the capacity of the economy to supply, and either gives rise to significant price inflation or reduced quality in supply (or both).

Impact Evaluation

The impact is **negative** and affects:

- Major project proponents;
- Potential employees of major projects;
- Other businesses using inputs to production that can be substituted with the inputs required of these major projects;
- The Government of Mauritania Treasury; and
- Households living on fixed or no income.

⁽⁵⁴⁾ Article: CHOPLIN A, Antil A., 2004. Le chaînon manquant : la route Nouakchott-Nouadhibou, dernier tronçon de la transsaharienne Tanger-Dakar. *Afrique contemporaine*, n°208, 115-126

The **severity** of the impact is described below:

- *Duration of the impact* will be *medium-term* and coincides with planned construction activity aimed at maintaining Chinguetti production at optimal levels.
- *Extent of the impact* will be *national* and could potentially affect significant royalty payments to the Government and modest additional employment.
- *Manageability of the impact* is *medium*; the Government has the policy tools and support required to contain inflation.
- *Ability to adapt* to inflation is *low* for exporters and for the most vulnerable in the community due to high poverty levels and weak bargaining positions.

Between 20% and 30% of the population in Nouakchott live on less than US\$1 per day. Inflationary pressures already exist in Mauritania (inflation was 10.4% at the end of 2004). It is likely that these pressures will increase as a result of the simultaneous development of these projects. Inflation disproportionately impacts on the spending power of the urban poor.

Mitigation

It is expected that the Government will carefully select monetary policy and communicate these policies to the community. Further, it may investigate labour supply expansion initiatives including skills training and selective immigration policies. Woodside will:

- Provide advance briefings of likely local procurement requirements and early tender decisions relative to expected commencement of works to assist local businesses in planning forward investment and avoiding capacity constraints.
- Prepare a localisation plan addressing labour and other supply requirements.

Residual Impact

		Likelihood		
		Low	Medium	High
Severity	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

5.10

NON-ROUTINE IMPACTS

5.10.1

Decline in Livelihoods Resulting from an Oil Spill

Impact Identification

It is not normal practice for an SIA to consider the effects of non-routine (and unlikely) project aspects or impacts, such as oil spills. However, there was significant stakeholder comment about the potential impacts of an oil spill on the livelihoods of coastal communities in Mauritania and Senegal during the EIA and SIA consultation processes. Consequently consideration has been given to this issue. The assessment is largely qualitative and the assessment of the significance of impacts does not use the methodology that has been used for routine and cumulative impacts. This is because the severity and likelihood of the impact occurring is dependent on a very large number of variables including the nature and extent and timing of any spill. A variety of scenarios has been considered in the EIS.

Given that most major oil spills in the marine environment result from transportation-related incidents, there is a very significant existing oil spill risk to the marine and coastal sensitivities and values of the coast of Mauritania and Senegal. The communities in these areas currently face the risk of oil spill impacts unrelated to the Chinguetti Project. The Project will only contribute an additional 5% to 6% to the volume of oil currently transported annually off the coast of Mauritania (approximately 60 million tonnes).

An oil spill, though unlikely, could occur at any stage of the Project and potentially arise from:

- drilling and installation (wellhead leak, manifold leak);
- loss of containment from the FPSO or from the rupture or other failure of sub-marine equipment;
- vessel foundering at field location;
- shipping incidents related to the Project, which have the potential to release large quantities of oil, eg. trading tanker collision, sinking, structural or equipment failure; and
- shipping incidents not related to the Project but rather another oil project(s) or general transportation of hydrocarbons.

An oil spill risk assessment has been conducted and the outcomes are presented in detail in the Project's EIS. Multiple scenarios were computed using different hazard categories and spill volumes. In general, the risk

assessment indicates that, in the unlikely event of a spill, there would be a probability of some oil contacting some part of the West African Coast⁽⁵⁵⁾.

The severity of impacts on the environment depends on many different factors, including size, duration of the spill and exposure, season, weather and sea conditions and weathering of the oil. Environmental consequences will also differ at the surface, in the water column, at the seafloor, and on the coast and shoreline habitats.

An oil spill does have the potential to impact on fish as summarised in *Box 5.1*.

Box 5.1 ***Effects of Oil Spills on Fish***⁽⁵⁶⁾

Deaths. There is no evidence to date that any oil spill has killed sufficient numbers of adult fish or their young stages in the offshore open ocean ecosystem to significantly affect adult populations.

Effects on plankton. Following some oil spills, direct effects on fish plankton have been recorded, including the deaths of measurable numbers of larvae in the vicinity of the spill. However, because such large numbers of eggs and larvae are produced, and because most species have extensive spawning grounds, no effects on numbers in subsequent adult populations have been found in the few studies that have so far been made. Stocks could be at risk if the spill was very large; and coincided with spawning periods; or entered grounds of species whose spawning is restricted to small areas or to physically contained areas (eg. bays).

Effects on fish behaviour In most cases, wild fish will swim away from oil spills and long-term effects on local populations are avoided. There are some cases in which the behaviour of the fish might be altered to the detriment of local fisheries, though actual observations in the field are few and circumstantial:

- Many fish are territorial. Fish moving back into an area following a spill must re-establish territories for feeding and breeding. Thus local fisheries may take some time to recover.
- Fisheries dependent on the seasonal appearance of fish could be disrupted if fish change their migration route as a result of an oil spill.

Anything that prevents or reduces this spawning migration could affect fisheries in subsequent years, although effects would probably only be localized.

Sublethal effects. Whilst the immediate, lethal effects of oil can generally be measured, sublethal effects are more difficult to quantify as usual, natural aspects, such as dilution, animal predation and fisheries, which can alter the results.

Tainting. Fin-fish and shellfish exposed to crude oil or its products may become tainted and unfit for sale by acquiring oil-derived substances in the tissues which impart unpleasant odours and flavours. The time-scale for loss of taint (once the source has been removed) ranges from days to months depending on the exposure, species, temperature, feeding patterns and other factors. There are no accepted standards for permissible concentrations of hydrocarbons in foodstuffs. If there is clear evidence of taint, most authorities are likely to consider it a sensible precaution to prevent the sale of such products until regular chemical and sensory testing declares them free of contamination and therefore fit for sale.

⁽⁵⁵⁾ Quantitative Oil Spill Risk Assessment, APASA, 2004

⁽⁵⁶⁾ Extract from International Petroleum Industry Environmental Conservation Association (IPIECA) Report Series Vol 8 Biological Impact of Oil Pollution on Fisheries, 2000

The baseline profile indicates coastal communities in Mauritania and Senegal (between Nouadhibou and Cap Vert) are reliant, to varying degrees, upon fish for their livelihoods. In the highly unlikely event that a catastrophic spill reaches the coast or sensitive fishing areas in significant quantities, livelihoods may be directly and indirectly impacted in a variety of ways:

- Reduced availability of fish stocks for sale.

Fishing is a key economic sector for both countries and artisanal fishing provides livelihoods for many coastal communities.

- Reduced availability of fish stocks for consumption.

In Mauritania, domestic annual consumption of fish remains low with an average of 3kg to 4kg per capita and therefore oil spills will not affect Mauritanians' nutrition nationally. However, there is significant potential for food shortages in coastal communities reliant on the sea for food supply.

In Senegal annual fish consumption averages 28kg per capita⁽⁵⁷⁾ (75% of protein intake) and therefore lack of availability of fish protein resulting from an oil spill would have a higher impact on nutrition.

The average annual consumption in African countries is of 8.2kg per capita and 29kg per capita in France.

- Impacts on health which are most likely to result from reduced nutrition or ability to purchase food, rather than eating tainted fish (see *Box 5.2* for the potential impact of fish tainting on health).

Box 5.2

Potential Impact of Fish Tainting on Health

Impact of fish tainting on health.

One of the main concerns over tainting is the possible human health hazard of eating seafoods contaminated by oil-derived compounds. Such compounds may include low concentrations of carcinogens, although these are not necessarily the compounds causing the taint. So far, epidemiological studies have not demonstrated any increased risk of cancer or other diseases in humans through eating seafood from areas where oil spills have occurred (GESAMP, 1993; NRC, 1985).

Extract from International Petroleum Industry Environmental Conservation Association (IPIECA) Report Series Vol. 8 Biological Impact of Oil Pollution on Fisheries, 2000

- Physical damage to fishing equipment and infrastructure (see *Table 5.4* for the sensitivity of fishing equipment to oil spills).

⁽⁵⁷⁾ FAO, 2001

Table 5.4 Sensitivity of Fishing Gear to Damage by Stranded or Drifting Oil⁽⁵⁸⁾

Type of fishing gear	Sensitivity
octopus pots, baskets, fences	high
lift nets, cast nets	moderate
gill nets	moderate
purse seines, ring nets, beach seines	moderate/low
handlines, longlines, drift lines	low
trawl, dredges, sweep nets	low

- Affecting the quality of tourism attractions or experiences and therefore resulting in a decline in economic activity derived from tourism.

Fledgling tourism activities and attractions are being developed in a number of coastal areas in Mauritania, in particular the national parks. Saint Louis and the Langu de Barberie are relatively well-established tourism areas.

- Damage to inland socio-economic assets (eg. drinking water supply, wetlands, continental fishing and market gardening).

In the event of a catastrophic spill, there is potential for oil to move inshore and enter drainage channels and other aquifers that may offer a conduit for the oil to move into adjacent wetlands.

Impact Evaluation

The impact of a catastrophic spill could affect one or more of five Mauritanian coastal regions and seven Senegalese landing ports (previously shown in *Figure 4.8* in Chapter 4):

- Mauritania:
 - Nouadhibou;
 - Northern region - Imraguen Villages (PNBA to North of Nouakchott);
 - Nouakchott; and
 - Southern region (South of Nouakchott, including N'Diago and PND's area of influence).

⁽⁵⁸⁾ International Petroleum Industry Environmental Conservation Association (IPIECA) Report Series Vol. 8 Biological Impact of Oil Pollution on Fisheries, 2000; include modification from GESAMP,1993)

- Senegal:
 - Saint-Louis;
 - Potou;
 - Lompoul;
 - Fass Boye;
 - M'Boro;
 - Kayar; and
 - Dakar.

The oil spill risk assessment indicates that in the worst case scenario of a catastrophic spill and unfavourable weather conditions (not accounting for any oil spill response mitigation), the probability of oil reaching the coast at each of these locations varies with spill volumes and with the season (refer *Figure 5.2* and *Figure 5.3* for hypothetical cases of 140,000 barrels in winter and summer). The probability of surface oil appearing is shown for areas around Chinguetti. There is no modelling of oil spill scenarios resulting from product leaking from the numerous cargoes of petroleum which use Mauritanian and nearby international waters.

However, reliable predictions of impacts are not possible. Between 26 and 29 September 2005, the workshop on the Development of Artisanal and Coastal Fishing in Mauritania concluded there is a lack of reliable data on potentially impacted communities and how they live.

Figure 5.2 *Predicted Probability of Exposure from a Seabed Well Blowout in Summer (140,000bbl release of Chinguetti crude oil over a 14 day period)*

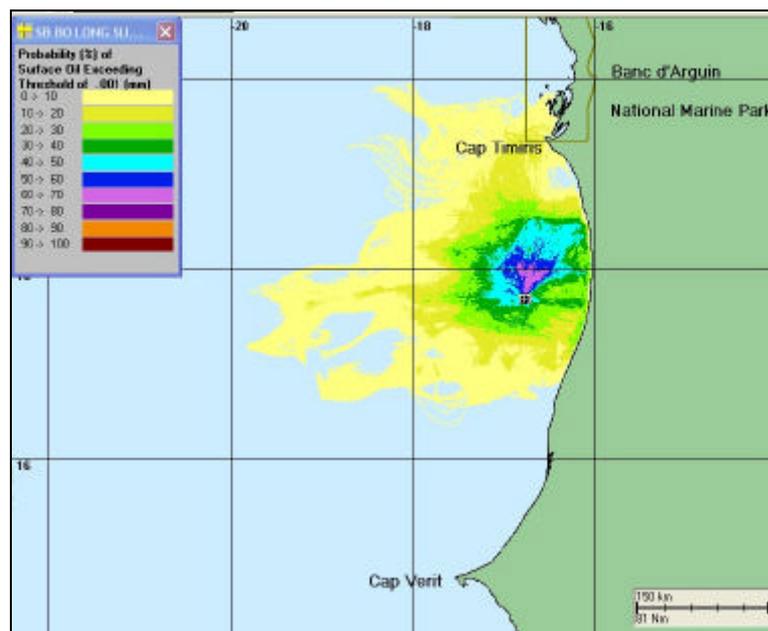
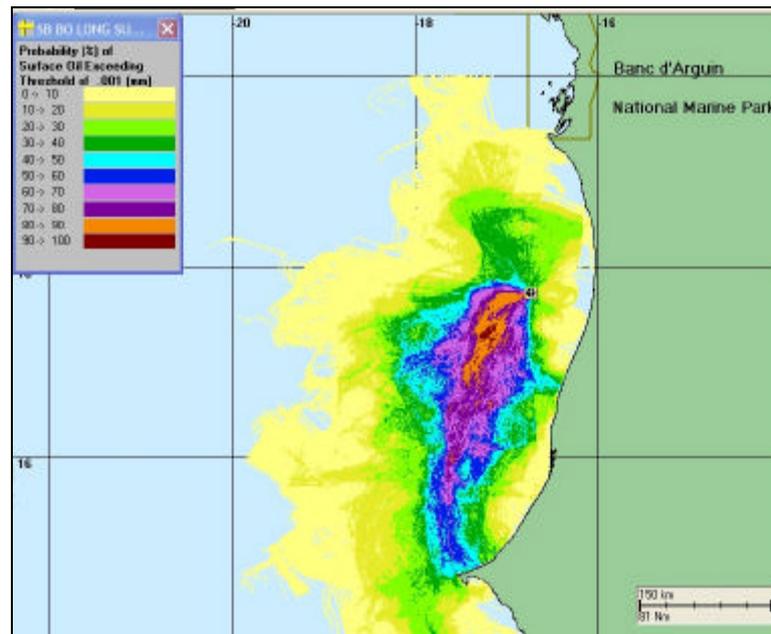


Figure 5.3 Predicted Probability of Exposure from Seabed Well Blowout During Winter (140,000 bbl release of Chinguetti crude oil over a 14 day period)



Conclusions on Impacts

The probability of an oil spill resulting from the Project is very low and has been identified as a non-routine project impact. If however, a spill was to occur, it could impact on one or more of the coastal communities between Nouadhibou and Dakar.

Many coastal communities rely on fish for sustenance and income; and those communities that are likely to experience more significant livelihood impacts are those in the PNBA and on the coast of Senegal, in particular Saint-Louis and Kayar. Smaller more isolated communities are less likely to be able to adapt to the changes caused by the impact due to lack of alternative livelihoods, poor access to health and water infrastructure, and isolation.

The Government of Mauritania does not yet have a national oil spill response plan in place or all of the equipment required for mitigation. Clean up and harm-minimisation will require interaction of multiple stakeholders under great time pressures and therefore the capacity to manage the impact is quite low at the current time.

Mitigation Strategies

The Government of Mauritania has a leadership role in the development and implementation of a national oil spill response plan.

Woodside will:

- Implement the new Woodside Mauritania Oil Spill Contingency Plan (OSCP) and test preparedness via desktop and equipment deployment exercise.
- As detailed in the Woodside Mauritania OSCP, deploy regional stockpiles of oil spill response equipment thereby supporting the Government's capability to respond to an oil spill from any source.
- Provision of training to relevant Government personnel to build capacity in contingency planning and response.

Potential Government initiatives may include:

- Finalisation and implementation of the national oil spill contingency plan (the POLMAR Plan).
- Ratification of the 1992 Protocol to the Convention on Civil Liability for Oil Pollution Damage (CLC 92) and the 1992 Protocol to the Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND 92).
- Development of a national emergency response or disaster management plan that details measures to respond to catastrophic events impacting coastal communities.
- Assessment of the feasibility of a 'First Response Fund' or insurance strategy to fund the issuing of emergency food aid, tents, water or grants to communities affected by an oil spill during the first week of a crisis.
- Completion of a Baseline Profile of potentially affected communities in Mauritania and Senegal for use by the Government and the Shipping and oil industries as a basis for emergency response planning.
- Agreement of a consistent methodology for updates of Baseline Profile that can be used in the event of an oil spill to assist response planning, assessment of impact and, if required, an associated compensation formula.
- Development and agreement on a decision-support mechanism for chemical dispersant application.
- Development of protocols for environmental monitoring in the event of an oil spill.

Box 5.3 Recognised compensation principles according to the 1971 IOPCF

Extract from the 1971 INTERNATIONAL OIL POLLUTION COMPENSATION FUND Claims Manual
Accepted principles for claims:

- *Consequential loss*: loss of earnings suffered by the owners or users of property contaminated as a result of a spill:
 - eg. fisherman's loss of income as a result of his nets becoming polluted.
- *Pure economic loss*, ie loss of earnings sustained by persons whose property has not been polluted:
 - eg. a fisherman whose boat and nets have not been contaminated may be prevented from fishing because the area of the sea where he normally fishes is polluted and he cannot fish elsewhere.
 - a hotelier or restaurateur whose premises are close to a contaminated public beach may suffer loss of profit because the number of guests falls during the period of pollution.

Claims for pure economic loss are admissible only if they are for loss or damage caused by contamination. The starting point is the pollution, not the incident itself.

Qualifications for compensation:

There must be a reasonable degree of proximity between the contamination and the loss or damage sustained by the claimant. A claim is not admissible for the sole reason that the loss or damage would not have occurred had the oil spill not happened.

When considering whether the criterion of reasonable proximity is fulfilled, the following elements are taken into account:

- the geographic proximity between the claimant's activity and the contamination;
- the degree to which a claimant was economically dependent on an affected resource;
- the extent to which a claimant had alternative sources of supply or business opportunities; and
- the extent to which a claimant's business formed an integral part of the economic activity within the area affected by the spill.

The 1971 Fund also takes into account the extent to which a claimant was able to mitigate his loss.

As regards the tourism sector, the 1971 Fund makes a distinction between:

- (a) claimants who sell goods or services directly to tourists and whose businesses are directly affected by a reduction in visitors to the area affected by an oil spill, --claims admissible; and
- (b) those who provide goods or services to other businesses in the tourist industry, but not directly to tourists. --claims generally not admissible

Assessment of a claim for pure economic loss is based on

- actual financial results (not budgeted) of the individual claimant for appropriate periods during the years before the incident.

Any saved overheads or other normal expenses not incurred as a result of the incident should be subtracted from the loss suffered by the claimant, for both consequential loss and pure economic loss.

Contamination of fisheries and aquaculture products

If there are mortalities in fish and aquaculture stocks following an incident, the claimant should document the loss by preserving samples and using photographic and other forms of recording to demonstrate the nature and extent of the loss.

Claim presentation

Claimants should substantiate their loss with appropriate documents or other evidence. Claims for consequential loss and pure economic loss should include the following information:

- Nature of loss, including proof that the alleged loss resulted from the contamination
 - Comparative figures for earnings in previous periods and during the period when economic loss was suffered, for example in the form of audited accounts or tax returns
 - Comparison with similar areas outside the area affected by the oil spill
 - Method of assessment of loss
 - Saved overheads.
-

6.1**INTRODUCTION**

The SIMP forms part of Woodside's broad operational management strategy to manage the Project and its impacts on the people and environment of Mauritania. The work undertaken during the SIA process feeds into five elements of the strategy:

- localisation and training plans;
- communications and stakeholder engagement plans;
- OSCP;
- SIMP; and
- social responsibility plan (refer *Figure 6.1*).

An outline for a SIMP has been developed as a preliminary draft for discussion with stakeholders.

In line with Woodside's aspiration, "*to be a force for good through building long term relationships with governments and the communities in which it operates*", the outline SIMP is informed by the *IFC Good Practice Note: Addressing the Social Dimensions of Private Sector Projects*. It has been developed to synthesize impact management and operational policies, and make transparent the workstreams that Woodside will commit to developing. Key elements of the outline are:

- description of Project impacts,
- description of strategies for mitigation,
- proposed leadership roles for development and implementation of individual strategies, including showing where partnership mechanisms appear to be appropriate,
- the key elements of the SIMP and an example of how key performance indicators will be documented, and
- performance monitoring and reporting framework.

The Framework is formed around the Chinguetti Project EIA, SIA and Woodside Mauritania operational policies. Key elements of the operational policies are the localisation and training plans, Social Responsibility Plan and HSE Plan. Integration in management of environmental and social impacts is achieved through strong linkages to the Fisheries Interaction Management Plan, OSCP, Waste Management Plan and five modules of the EMP.

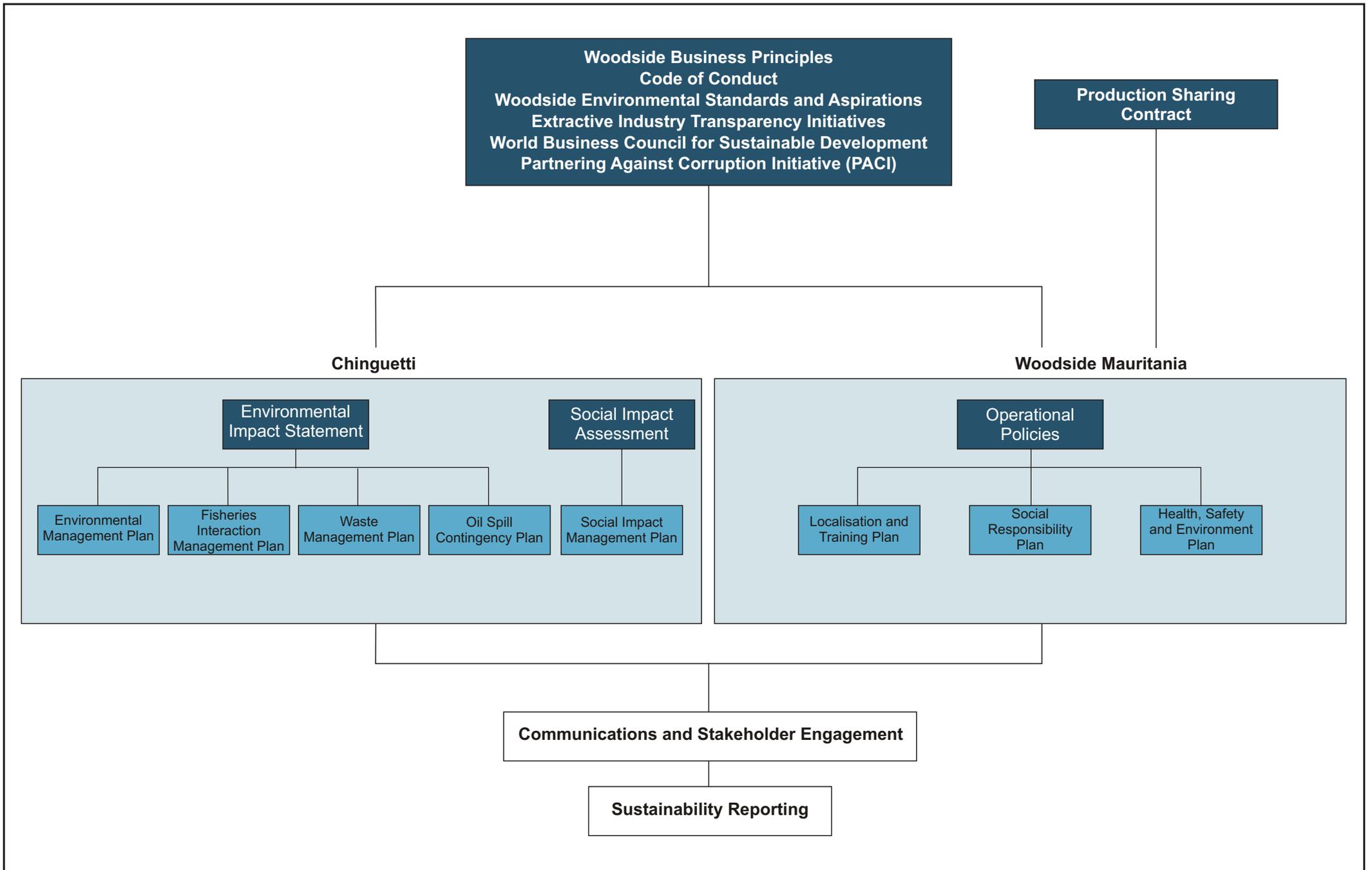


Figure 6.1 Social Impact Management Framework

6.2

MITIGATION OBJECTIVES

Mitigation strategies are designed to avoid, reduce or minimise impacts or compensate for unavoidable non-routine adverse impacts. The SIMP will focus on the impacts and mitigation strategies identified in this document for which Woodside has lead responsibility or where it can influence broader social impacts. In addition the identification of sustainable development opportunities and strategies to deliver the benefits of the Project to communities is an important aspect of the SIMP.

Avoidance

Where practical, impacts will be avoided or enhanced through modifications in project design or operation, eg. waste management, training.

Reduction or minimisation

Where impacts cannot reasonably be avoided, measures will be taken to reduce or minimise impacts, eg. provision of on-the-job training to add to pool of suitable labour.

Compensation

Where non-routine adverse impacts are unavoidable, appropriate compensation measures may be developed with affected parties (eg. Project-related oil spill).

Sustainable Development

Woodside recognises the Chinguetti Project has a finite life. The SIMP will identify opportunities for the application of sustainable development principles in the management of Mauritania's emerging oil industry, which can continue beyond the decommissioning of the Project.

6.3

ROLES AND RESPONSIBILITIES

Roles and responsibilities for the implementation of mitigation strategies are set out in *Table 6.1*. The structure of roles and responsibilities has been designed to recognise both the organisational structure of Woodside Mauritania and that some impacts are for the Government of Mauritania to mitigate.

Table 6.1 Summary of Impacts and Mitigation/Enhancement

IMPACT	MITIGATION / ENHANCEMENT STRATEGIES	Leadership in Implementation			
		Woodside	Contractors	Govt	IGOs
Routine Impact: Establishment of a Domestic Oil Industry					
Establishment of a domestic oil industry	Strengthen ability to regulate and manage industry issues via national initiatives to exceed best practice in environmental assessment and monitoring, revenue management, sustainable economic development, training/skills, and oil spill preparedness				
	Support the Government, where appropriate, to strengthen its ability to promote acreage, regulate and manage industry issues and strategic national opportunities in the hydrocarbon sector				
Routine Impact: Creation of a Finite Revenue Stream					
Increased Government revenues	Strengthen budget appropriate processes and adopt transparency initiatives				
	Take appropriate regulatory measures to sustain improved balance of trade				
	Disclose payments to the Government in accordance with the Extractive Industries Transparency Initiative				
	Investigate the feasibility of additional volumes of oil production through tieback opportunities				
Exchange rate appreciation	Investigate the potential for fluctuations in the balance of trade and undertake monitoring				
Increased inflation	Investigate options for minimising the risk of increased inflation				
Creation of political and social tension in relation to the expectations of oil revenue	Adopt transparency standard in respect to public sector finance				
	Implement commitments to electoral reform and democratic elections in accordance with the proposed schedule				
	Fulfil reporting requirements in a manner consistent with commitments made under Extractive Industries Transparency Initiative				
	Ensure that the Communications Plans for the Project include accurate information on the scale of the Project and the timing associated with revenue				
Creation of political and social tension in relation to oil revenue management	Political and economic decision-makers to consult stakeholders on possible revenue management strategies				
	Implement commitments to electoral reform and democratic elections in accordance with the proposed schedule				
	Continue to assist the Government in its assessments of production and development costs, production profiles and revenue from the Project				
Eventual reduction in revenues to the government (decommissioning)	Implement appropriate revenue management and economic diversification strategies				
	Report on revenues paid to the Government and revised projections for future production profiles				
	Work with Chinguetti Project JV participants to fulfil exploration commitments and investigate tieback opportunities				
	Investigate the development potential of other oil and gas discoveries in Mauritania				
Eventual reduction in employment and economic activity (decommissioning)	Investigate opportunities for further economic diversification in existing and new industry sectors				
	Prepare a decommissioning plan and discuss this with the Government and other stakeholders well in advance of the end of revenues				

Table 6.1 Summary of Impacts and Mitigation/Enhancement

IMPACT	MITIGATION / ENHANCEMENT STRATEGIES	Leadership in Implementation			
		Woodside	Contractors	Govt	IGOs
Routine Impact: Creation of Employment					
Increased direct employment	Prioritise recruitment from Mauritania and monitor performance of recruitment success				
	Establish appropriate targets to maximise Mauritanian employment				
Increased indirect and induced employment	Require contractors to comply with Woodside Mauritania's recruitment and employment policies and to achieve employment outcomes consistent with the localisation and training plans				
	Give preference to sourcing of goods and services from local companies as long as they are equivalent in terms of price, delivery and quality - in accordance with the terms of the PSC				
	Monitor the proportion of locally sourced goods and services by product and category and report on them.				
Increase in skills and marketability as a result of employment	As far as practical, design elements of training to ensure that the skills learnt can be equally applied to other industries				
	Continue to offer internships to develop skills, knowledge and experience of the Mauritanian workforce				
Routine Impact: Demand for Skilled Labour					
Provision of training to Government via GPC	Support the development of the Government's capability to regulate and manage environmental and socio-economic issues				
	In addition to formal teaching and on the job training, demonstrate best practice social and environmental techniques when dealing with the Government				
Provision of training to Mauritians by Woodside	Train Mauritanian nationals in numbers marginally in excess of those required immediately on the Project, where practical and where appropriate candidates exist				
	Continue vocational training to increase the number and skills levels of Mauritanian nationals				
	Require contractors to submit a plan in support of the objectives of Woodside's localisation and training plans				
	Pool training budgets with contractors and other employers for more effective and efficient training of staff by appropriate third parties				
	Work with industry to support the Government's efforts to enhance the technical training sector				
Movement of skilled workers to the oil industry from other sectors	Provide remuneration for employees that typically does not exceed the top quartile (rather than in excess of market rates)				
	Implement localisation and training plans aimed at increasing capacity in local labour market				
	Minimise movement of skilled workers from other sectors to the oil sector through selective skilled migration, flexible public sector pay structures and training provision				
Increased social tension due to perceptions of employment inequality	Include information on Woodside's recruitment and contractor selection practices and rationale in the Project communication plan				
Creation of tension between the Mauritanian nationals and the expatriate workforce	As far as practical, actively seek to localise the Project workforce whilst employing on merit				
	Educate both nationals and expatriate direct workforce regarding cultural differences and sensitivities				
	Articulate individual behavioural expectations in (Code of Conduct) performance agreements and management reviews for direct employees				

Table 6.1 Summary of Impacts and Mitigation/Enhancement

IMPACT	MITIGATION / ENHANCEMENT STRATEGIES	Leadership in Implementation			
		Woodside	Contractors	Govt	IGOs
Routine Impact: Demand for Goods and Service / Infrastructure					
Increased demand for high quality housing	Continue to liaise with parties associated with housing supply to set more realistic expectations of Project demand going forward				
Increased expenditure and local economic development	Work with local businesses to increase the likelihood of goods and services being procured locally rather than imported				
Routine Impact: Additional Demand for Infrastructure					
Immigration for Project opportunities resulting in increased pressure on social infrastructure	Establish clear migration policies to address the potential for immigration				
	Provide the Government with accurate employment projections				
Health and environmental risks of waste management	Finalise waste management plan in 2005 to take account of the Chinguetti operations phase and continued exploration activity				
	Implement changes arising from the new waste management plan				
Port congestion	Engage with Port Master in planning traffic movements, land use and administration allow for continued and enhanced Port operations				
Increased traffic volumes and road traffic accidents	Continue driver training programs for staff drivers and policy of escorted travel of untrained drivers in Woodside vehicles				
	Continue to monitor and enforce road safety standards expected of Woodside employees and contractors				
	Demonstrate road safety awareness through implementation of Woodside safety policies				
	Investigate with the Government road agency the potential to improve safety in areas subject to increased traffic as a result of Project activities, in particular regular road maintenance, traffic management and policing of driver standards by the local authorities				
Routine Impact: Change in Social Pathologies					
Increased social pathologies	Support current and additional programs for HIV/AIDS and other health issues				
	Provide additional social and recreational activities and French and Arabic language programs for staff and contractors				
	Provide health awareness training to the direct workforce including a significant briefing on the risks of alcohol abuse, drug use, transmission and prevention of sexually transmitted diseases such as HIV/AIDS, the importance of safe sex, avoidance of unwanted pregnancies				
	Brief the workforce on expected standards of behaviour and enforce zero tolerance policy on prostitutes in Woodside accommodation. This means instant removal from Mauritania of the offending expatriate contractor or staff member				
	Promote voluntary counselling and testing for HIV/AIDS and STDs within the workforce and their families				
	Make condoms available without charge in accommodation and encourage contractors to do likewise where applicable				
	Implement strategies to minimise the Project's requirements for expatriate workers				
Increased health, safety and environmental professionalism in workplace culture	Provide continuous reinforcement training and monitor and report on HSE performance				

Table 6.1 Summary of Impacts and Mitigation/Enhancement

IMPACT	MITIGATION / ENHANCEMENT STRATEGIES	Leadership in Implementation			
		Woodside	Contractors	Govt	IGOs
Cumulative Impacts					
Immigration facilitated by an improved transportation network	Establish clear migration policies to address the potential for immigration				
	Provide the Government with accurate information on Project employment prospects to assist them to communicate the realistic employment prospects available in Nouakchott				
Increased costs to business - multiple construction projects	Set appropriate monetary policy and implement a skilled migration program				
	Provide advance briefings of likely local procurement requirements and early tender decisions relative to expected commencement of works to assist local businesses in planning toward investment and avoiding capacity constraints				
	Prepare a localisation plan addressing labour and other supply requirements				
Non-Routine Impacts					
Decline in livelihoods resulting from an oil spill	Finalise and implement the national oil spill contingency plan (the POLMAR Plan)				
	Ratify the 1992 Protocol to the Convention on Civil Liability of Oil Pollution Damage (CLC 92) and the 1992 Protocol to the Convention on the Establishment of an international fund for compensation of Oil Pollution Damage (FUND 92)				
	Develop a national emergency response or disaster management plan that details measures to respond to catastrophic events impacting coastal communities				
	Assess the feasibility of a "First Response Fund" or insurance strategy to issue emergency food aid or grants to oil spill affected communities during the first week of a crisis				
	Complete a Baseline Profile of potentially affected communities in Mauritania and Senegal for use by the Government and the shipping and oil industries as a basis for emergency response planning				
	Agree a consistent methodology for updates of Baseline Profile that can be used in the event of an oil spill to assist response planning, impact assessment and, if required, an associated compensation formula				
	Develop and agree a decision-support mechanism for chemical dispersant application				
	Develop and agree protocols for environmental monitoring in the event of an oil spill				
	Implement the new Woodside Mauritania Oil Spill Contingency Plan (OSCP) and test preparedness via desktop and equipment deployment exercise				
	As detailed in the Woodside Mauritania OSCP, deploy regional stockpiles of oil spill response equipment thereby supporting the government's capability to respond to an oil spill from any source				
Provide training to relevant Government personnel to build capacity in contingency planning and response					

The SIMP will focus on those impacts for which Woodside has leadership responsibility as indicated in *Table 6.1* (dark shading).

6.4 ***MONITORING OBJECTIVES***

As the SIMP forms part of a broader management system, the feedback, monitoring and reporting program will need to be aligned with the review schedules for other plans. The key objectives of monitoring are as follows.

- Verification of data collected,
- Assurance that contractual undertakings related to impact enhancement and mitigation are implemented (eg. localisation and training strategies),
- Early detection of variations from predicted impacts and to allow for transparent provision of relevant information to the Government,
- Assessment of the effectiveness of mitigation strategies, and
- Assessment of the efficiency of mitigation actions and social investments for all stages of project delivery.

In order to achieve these objectives, critical success factors are:

- Streamlining of data collection and reporting,
- Development of a Monitoring and Reporting Program, including the definition of targets and Key Performance Indicators (KPIs) to aid project management;
- Integration with existing audit and reporting processes and schedules, and
- Provision of meaningful feedback to stakeholders on social impact management.

6.5 ***MEASUREMENT***

Where appropriate, KPIs for mitigation and social investment strategies will be developed to help assess progress towards the objectives of mitigation strategies for which Woodside has leadership responsibilities.

Indicators comprise three variables:

Input – how much time, money, human resources or materials are used.

Output – the quantifiable change resulting directly from the mitigation.

Outcome – an understanding of the influence of the output in achieving mitigation objectives.

The definition of these KPIs will depend on a variety of factors including cost of data collection and reliability of data collected. Given the nature of some social issues, it is likely that a combination of qualitative and quantitative data will be used. Performance will be gauged by a consideration of efficiency and effectiveness.

6.6 MONITORING PROGRAM

It is anticipated that two cycles of monitoring and review will be necessary. The first cycle will assess and review the effectiveness and efficiency of mitigation strategies in reaching their targets. The second cycle will involve a review of overall social management performance to manage the uncertainty that is inherent in social issues and affect changes to the overall Framework. Potential variables include: project design, identified project affected people, or indeed the nature of the impacts caused by the Project.

Table 6.2 Monitoring Cycle 1 - Monitoring of Mitigation Strategies

Objective of review	Ascertain effectiveness and efficiency of Woodside-led strategies and identify issues or concerns relating to mitigation strategies led by others.
Governance	Woodside
Collection and presentation of data	Woodside
Assessment of Report	Woodside Africa Business Unit
Timeframe for data review	6 monthly during 2006 (twice a year)
Deliverables	Interim report to Woodside Mauritania General Manager and input to corporate sustainability reporting

KPI data will be regularly collected and reviewed. The frequency of the review will be dependent on the nature and significance of the impact concerned, but is likely to be bi-annual in 2006 and involve regular communication with Government and other stakeholders. It will be important not to add or change indicators on an 'ad hoc' basis, and to maintain the review cycle so that changes to the monitoring process can be understood by stakeholders. At the end of 2006, the frequency will be reviewed.

The results of the monitoring process will be factored into ongoing mitigation strategies and will identify:

- Current results;
- Limitations of data;
- Progress towards objectives;
- Degree of improvement relative to the last reporting period; and
- Emerging impacts of trends that would require further monitoring and changes to KPIs.

If we take the example of a potential HSE training scheme outlined in *Table 6.3*, the strategy is to work in partnership with an established training provider, not only to improve the HSE standards of those contracted to Woodside, but also to build the capacity of the partner organisation to provide HSE training to internationally accepted standards.

It would be expected that initially Woodside and its key contractors would have to have an active human resources presence to provide and facilitate training on a regular basis, but that this physical presence would reduce over time as capacity grows in the partner organisation. Therefore inputs to be monitored are man-hours, and financial contribution. Direct outputs would relate to the number of people entering training and the number of people achieving the required standards. These output data would contribute to an understanding of the financial efficiency of the scheme, and the quality and appropriateness of training. In order to gauge the outcomes of the training, there would need to be an indicator of the quality of HSE performance from contractors, and also an indicator for the number of hours Woodside personnel spend engaged in training, to understand whether or not trainers are being trained.

Table 6.3 Worked Example of Mitigation Strategy and Monitoring

Strategy	Objectives	Indicators			
		Input	Output	Outcomes/Effectiveness	Efficiency
Woodside in partnership with a training provider runs a training program around Health, Safety and Environment for its employees and contractors. Whilst initially training is offered by Woodside, the intention is that knowledge and skills should be transferred to the partnering training organisation in order that they take up training in the future.	<ul style="list-style-type: none"> ▪ Improve Health, Safety and Environmental Performance ▪ Train the trainers 	<ul style="list-style-type: none"> ▪ Woodside / contractor / man-hours ▪ Woodside / contractor expenditure (\$) 	<ul style="list-style-type: none"> ▪ Number of trainees entering course ▪ No. of graduates achieving required standards 	<ul style="list-style-type: none"> ▪ HSE performance of Woodside contractors ▪ No. hours Woodside personnel are engaged in the training program 	Inputs (\$) / number of graduates

Table 6.4 Monitoring Cycle 2 - Social Management Performance Review

Objective of review	Review overall social performance including success of mitigation strategies, relevance of KPIs, gaps in existing processes, and changes in operating context.
Governance	Woodside Africa Business Unit
Collection of data	Woodside Africa Business Unit Woodside Mauritania Contractors
Assessment of data	Woodside Africa Business Unit Woodside Mauritania Stakeholder Reference Group
Timeframe for data review	Commencing every 2 years from early 2008
Deliverables	Performance Report

This monitoring cycle provides the opportunity to incorporate learnings and reassess and revise the Framework. Factors to be considered include:

- Review identified PAPs;
- Review of impacts;
- Review of significance of impacts;
- Gaps in existing mitigation strategies; and
- Necessity for changes to mitigation/social investment strategies.

This review process will build on the results of the monitoring of mitigation strategies, and may require additional stakeholder engagement to identify gaps and further develop and enhance the Framework.