THE REPUBLIC OF THE GAMBIA

DEPARTMENT OF STATE FOR TRADE, INDUSTRY AND EMPLOYMENT

GAMBIA INVESTMENT PROMOTION AND FREE ZONES AGENCY

TRADE GATEWAY PROJECT

ENVIRONMENTAL and SOCIAL MANAGEMENT PLAN

FINAL REPORT - AUGUST 2001

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(E) ECOLAS
ENVIRONMENTAL CONSULTANCY & ASSISTANCE

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1. INTRODUCTION

The Government of the Gambia is preparing a loan request to the International Development Association (IDA) for financing of the Trade Gateway Project. In line with the World Bank's requirements on environmental and social safeguarding related to such projects, an environmental assessment (EA) is to be included as an essential part of the loan request. Following environmental screening of the proposed Trade Gateway Project (TGP) by the World Bank, this has been classified as a Category A project. After the final selection of the project site, the Environmental Impact Assessment Study (Ecolas, 2000) that was prepared for the project is reviewed and updated, which results in the Environmental and Social Management Plan presented here.

1.1. Objectives and background of the ESMP

The objectives of this ESMP are to provide a detailed plan for the prevention, mitigation and compensation of negative impacts on the environment during all stages of the project. Initially, five alternative sites were considered for possible implementation of the project, and these five sites were studied for environmental and social impacts in the EA (Ecolas, 2000). From this assessment and the development of the TGP, two sites emerged as priority sites for implementation: Bund Road and Airport. During the preparation process, the proposed enabling works at the Bund Road site near the port of Banjul that were initially part of component 1 (see 1.2., Brief project description) were dropped. These would have required (i) partly occupation and other adverse impacts on a site proposed for protection under Ramsar status designation; and (ii) uneconomic engineering to cope with unsuitable geotechnical soil characteristics and the flood-prone feature of the area. The airport site is the final location for the TGP and the ESMP is tailored to this site.

Environmental screening is described in the WB Operational Manual (OP 4.01). Classification as a Category A project implies that the proposed project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures to prevent, minimise, mitigate, or compensate for adverse impacts and improve environmental performance.

1.2. Brief description of the Trade Gateway Project

The TGP consists of five main components.

1.2.1. Physical Investment for a new Free Zone at the airport

This component has two sub-components: Free Zone infrastructure, and equipment for one-stop-shop building.

1.2.1.1. Free Zone Infrastructure
This sub-component has six items: (a) Enabling works at the airport, (b) Fencing and access roads, (c) Common utilities (energy, water, telephone...), (d) Common users warehouse, (e) One-stop shop building, and (f) Consulting services for supervision of works.

(a) Enabling works at the airport. The enabling works will prepare the site for civil works. They include removing trees as well as levelling the soil at the site.

(b) Fencing and access roads. The fencing will delimit the Free Zone area and will allow the Customs to control the transfer of goods between the Free Zone, the port, the airport, and the local economy. The fencing will ensure also the protection of the Free Zone equipment and buildings from users. The access roads will ensure the linkage of the GIPFZA headquarters with the other buildings, such as warehouses; they ensure also the linkage of the Free Zone with the airport and the port to allow the transportation of goods and products.

(c) Common utilities. This will include power, telephone, water, sewage. The project will finance the installation of these utilities inside the Free Zone and the connection of these utilities to the outside.

(d) Common users warehouse. The Project will finance a common user warehouse at the airport site. It will be used by the first operators that will have obtained their licences to operate and not wishing to build their own warehouses. The leasing rates proposed to those operators will be commercial. The purpose of this common user warehouse is for the government to send a clear signal to private developers about its commitment to develop Free Zones and give them an example to follow.

(e) One-Stop Shop building. The one-stop shop will provide services to both Free Zones related business and other private local and foreign investors in The Gambia. It will help potential developers and operators in their application process to obtain a licence to operate or develop and remain the privileged link of investors to the GIPFZA. The building will be located near the proposed new GCAA headquarters and will take into account the architecture appearance of the Airport main building, the proposed GCAA building, and the proposed hotel building to be constructed near the airport to create a homogenous ensemble.

This one-stop-shop building is expected be financed by a co-financier.

(f) Consulting services for supervision of works. Consultants will be recruited to ensure adherence to international standards.

1.2.1.2. One-Stop Shop Building Equipment

This sub-component consists in equipment for the one-stop shop building. This will include the necessary computer and telecommunications equipment for operating the building as well as equipment for receiving private investors. This equipment is expected to be financed by a co-financier.

1.2.2. Establishment of an Investment Promotion and Free Zone Agency (GIPFZA)
This component will contain the following sub-components:

- GIPFZA Operational Support;
- Technical Assistance to GIPFZA;
- Consulting services to complete and implement marketing surveys and marketing plan;
- Consulting services to promote investment;
- Various studies related to trade facilitation.

### 1.2.2.1. GIPFZA Operational Support

It is likely that, in the years immediately following its creation, the GIPFZA will not have enough revenues from licensing fees and land leasing to cover its marketing and operational expenditures. In addition, the GIPFZA will act as an implementing agency for the project. This will likely result in a negative cash flow in the initial years. To enable the GIPFZA to establish itself during this period, the Project will finance its operating costs during its first five years of operation.

These operating costs will include:

- salaries for key staff in the GIPFZA, i.e. the C.E.O. of the Authority, two marketing managers, a legal counsel, an expert in processing activities, an expert in trade and import/export, and an investor relations manager;
- office equipment;
- utilities costs that will include costs for power, telecommunications and water; and
- sanitation and maintenance.

Additional operational support will be provided through the hiring of a legal advisor and the development and maintenance of a web site.

### 1.2.2.2. Technical Assistance to GIPFZA

A highly qualified consulting firm will provide GIPFZA with technical assistance in both short and long runs. Short term assistance will mainly consist in helping GIPFZA to build its business plan that will identify strategic directions for the GIPFZA to undertake over a seven year time horizon. This business plan will be accompanied by a financial analysis, which will estimate annual revenues and expenditures, and justify the choices and recommendations. It will also focus on the backward linkages to be established between the Free Zones and the Gambian private sector. In the long run, the emphasis will be put on transfer of "know how" and assistance to GIPFZA management.

### 1.2.2.3. Market Surveys and Marketing Plan

The project will finance market surveys that will assess the needs of international investors, identify interested operators and developers and propose tailored products to attract them to invest in The Gambia. Using the recommendations of the market surveys, the GIPFZA will design and implement an international marketing plan to promote The Gambia as a favourable destination for investment through the Free Zones and incentive packages. As part of this endeavour, a brochure will be prepared and sent to targeted potential investors, followed by an intensive marketing campaign by mail, phone or direct meetings. Visits will be organised for investors willing to visit the Free Zones.
1.2.2.4. **Investment Promotion - Consultancy**

The project will finance consultants to help prepare fairs in the Gambia or abroad, and promotional materials.

1.2.2.5. **Studies**

The project will finance different studies related to GIPFZA's missions.

- Design of the interface River-Free Zones: The idea of creating an interface between the Free Zones and the Gambia River was formulated in the feasibility study as a way to create business opportunities for poor farmers upriver, by linking them through the river to the agro-products exporters of the Free Zones. On the other hand, it is unlikely that investors in this type of business can be attracted during the first years of the Free Zones creation. Therefore, the first phase will carry out the economic/financial viability analysis as well as the engineering design study. Terms of reference for these studies will be prepared by the GIPFZA and approved by the Bank. Consultants will be selected following World Bank guidelines. Upon successful completion of the above studies, implementation will be carried out during APL 2.

- Trade and Facilitation Survey: The purpose of this audit is to examine and evaluate obstacles to cross-frontier movement of a routine consignment and its associated payment. It will follow World Bank/IECC (International Express Carriers' Conference) Facilitation Audit Methodology as described in *Trade & Transport Facilitation - An Audit Methodology*, by John Raven, 2000.

- Quality Management Systems Audit at the Customs and Excise Department: Using Quality Management Systems Principals, the audit will focus on establishing the Customs & Excise Department's (CED) role as a trade facilitator and propose required changes in regulations, operational procedures and human resources to achieve the CED's revised role. The QMS principles are internationally accepted and can be certified using International Standards Organisation certification procedures (ISO 9000).

1.2.3. **Support to the Gambia Divestiture Agency (GDA)**

This component will support the Government’s agenda for privatisation. It will include three components:
- Divestiture support;
- Divestiture Safeguarding and Monitoring;
- Divestiture consensus building.

1.2.4. **Capacity Building**

This component will include the following items:
- Training for stakeholders under the mentorship of GIPFZA;
- GDA Capacity-Building;
- Regulatory and Institutional Set-Up for Divestiture;
- Training for the PCU.
1.2.4.1. Training for stakeholders

The GIPFZA will be responsible for the following activities:

(1) Granting licences to operators and investors willing to invest in the Free Zones.
(2) Regulating of activities and operations in the Free Zones.
(3) Promoting The Gambia as a preferred destination for international investors.
(4) Helping and assisting local and foreign private investors in their application process through the one-stop shop.

To accomplish these missions, the GIPFZA will need to strengthen its technical expertise in regulation, marketing, management. Although key members of the Agency will be competitively selected based on technical qualifications, the project will provide targeted training to sharpen their capabilities to accomplish specialised tasks in a world class competitive environment.

Moreover, as customs procedures play one of the most important roles in the success of Free Zones, customs procedures and transactions may be computerised and streamlined, and management systems may be introduced, with ISO 9000 certification targeted for the medium term, following the QMS audit of CED. The Project will provide training funds for CED staff to eventually support these management reforms and assist the Department to assume its new role.

Other public and private stakeholders may benefit from training if such needs arise during the project implementation.

1.2.4.2. GDA Capacity-Building

Capacity building and training of staff are at the core of GOG’s strategy to develop local expertise and ensure the sustainability of reforms. The Project plans to sign a time-based service contract with a consulting firm, which will provide expertise to GDA as needed. Training will cover financial and business analysis, divestiture techniques, private participation in infrastructure and public services and privatisation promotion as well as World Bank procurement and financial management. Special training/study tours for stakeholders and policy makers on specific program elements will be financed under the Project.

1.2.4.3. Regulatory and Institutional Set-Up for Divestiture

Due to the key importance of these enterprises to the economy, Divestiture of Track I PEs will require legislative support to facilitate transactions (e.g. preparation of sector legislation and regulations and the setting up of a multi-sector regulatory institution). This sub-component will finance the set-up of such a support.

1.2.4.4. Training for the Project supervision and co-ordination unit (PCU)

The Project supervision and co-ordination unit will be housed in the DOSTIE. Implementation will rest within GIPFZA and GDA. Key staff of this Department of State and agencies will be trained in order to ensure adequate financial, procurement, disbursement management of the Project.
1.2.5. **Project and Environmental Management**

This component will include the following:
- Project management;
- Environmental and Social Management.

1.2.5.1. **Project management**

This component will finance all costs related to project co-ordination in the DOSTIE.

1.2.5.2. **Environmental and Social Management**

The proposed Project is rated Environmental Category A. In conformance with Bank guidelines, an Environmental Assessment has been carried out by the consultant Ecolas, financed by the PHRD grant from Japan (Ecolas, 2000). The EA has identified environmental and social issues related to the FZ site and has recommended measures to be integrated in the Environment Management Plan. These will be implemented during the construction and operations phases of the airport site. Other recommendations will be made for the River Free Zones, to be identified during APLI1. Since many of the economic activities in the FZ are yet to be identified, the periodic environmental and social assessments will also include activity-specific EMPs, as they are identified. This sub-component thus involves two activities:

(a) *Periodic environmental and social assessments.* In order to ensure the environmental and social sustainability of the Project, annual environmental and social assessments will be carried out by an independent consulting firm. The consulting firm will identify and assess the importance of, and recommend environmental mitigation related to: (i) all negative trends in pollution patterns and other environmental impacts caused by Free Zones development and operations, and (ii) all social effects due to the development of the Free Zones. These recommendations will constitute an annual update of the EMP for each FZ and transmitted to the GIPFZA, who will establish and enforce environmental regulations and procedures within the zones.

(b) Environmental mitigation measures. The project will fund environmental mitigation measures in the initial and annual EMP updates, which will include: (i) mitigation measures related to the development of the airport FZ site, and eventually the development of River Free Zones; and (ii) industry and site-specific mitigation measures related to the installations within the FZs.
2. **SUMMARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT MATRIX**

The results of the impact identification and assessment are presented in the Environmental Assessment document (Ecolas, 2000). All impacts for the selected project site, which appear to be of potential importance at this stage, are summarised here in Table 2.

The results of this inventory exercise for the airport site are also provided as an activity/impact matrix (Table 1).

The assessment has been based to a maximum extent on quantitative elements. The assessment criteria have been outlined and discussed in each separate chapter of the main study and are primarily based on environmental quality objectives, base values and standards from legislation of The Gambia whenever available. Given the importance of the project, however, the assessment has also been carried out using international quality objectives and guidelines for reference. The assessment output has been based on the following criteria:

- **magnitude**: referring to the quantum of change to be experienced
- **extent**: referring to the area which will be affected
- **significance**: referring to the importance of the magnitude considering the present situation
- **special sensitivity**: referring to region-specific situations of sensitivity e.g. protected habitats.

For the assessment of the importance of impacts, other factors such as reversibility and duration were also taken into account. Both direct and indirect effects are considered.

**Table 1. Activity/impact matrix for the FZ development**

<table>
<thead>
<tr>
<th>Potential impact/impact items</th>
<th>Construction</th>
<th>Operation (all phases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air quality</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Surface water pollution</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Soil/groundwater pollution</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Water supply</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Sea water pollution</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Topographical/morphological modifications</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Marine sedimentation/erosion</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Waste production</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Noise</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Terrestrial wildlife loss/disturbance</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Terrestrial flora deterioration/impact</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Freshwater aquatic life deterioration/impact</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Loss of marine resources</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Land use limitations or change</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Archaeological, historical and cultural values</td>
<td>(x)</td>
<td></td>
</tr>
<tr>
<td>Human health and safety</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Transport</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Social effects</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Economic effects</td>
<td>(x)</td>
<td>x</td>
</tr>
<tr>
<td>Tourism</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

x: potential impact  
(x): potential impact but unlikely to occur under the current project concept
Effects are split, where appropriate, in site-related effects that are independent of the specific activities that will develop on the site, and effects related to specific activities.

As a general rule, all projected activities that are not explicitly treated here, are subject to an additional environmental and social impacts assessment once the projects are in the preparation/pre-feasibility phase, and before construction or implementation is started.

A narrative description as well as details of the impacts assessment is part of the EA document (Ecolas, 2000).
Table 2. Summary environmental and social impact assessment matrix for the project site.¹

<table>
<thead>
<tr>
<th>Environmental component</th>
<th>Project Phase</th>
<th>Sources</th>
<th>Expected impact</th>
<th>Significance</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Site related</td>
<td>Construction</td>
<td>Construction activities</td>
<td>Negative; Dust formation and emission</td>
<td>Slight, depending on the season; limited duration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Generated traffic</td>
<td>Negative; Emission of NOx, SO2, VOC, CO, TSP, Pb</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waste production and management</td>
<td>Negative; Odour</td>
<td>Slight</td>
<td>Prevention and management required</td>
</tr>
<tr>
<td>Operations Phase 1</td>
<td></td>
<td>Power generation 2 times 650 kW</td>
<td>Negative; Emission of NOx, SO2, particulate matter, CO, VOC</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td>Operations Phase 2</td>
<td></td>
<td>Power generation 2 times 650 kW</td>
<td>Negative; Emission of NOx, SO2, particulate matter, CO, VOC</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td>Specific operations related</td>
<td>Construction</td>
<td>Construction activities; kind and extent to be determined</td>
<td>Unknown at this stage</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td>Operations Phase 1</td>
<td></td>
<td>Agriculture produce processing</td>
<td>Negative; Emission of NOx, SO2, particulate matter, VOC</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other activities (to be determined)</td>
<td>Unknown at this stage</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td>Operations Phase 2</td>
<td></td>
<td>Agriculture produce processing</td>
<td>Negative; Emission of NOx, SO2, particulate matter, VOC</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other activities (to be determined)</td>
<td>Unknown at this stage</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Site related</td>
<td>Construction</td>
<td>Construction activities</td>
<td>Temporary lowering of the groundwater table; subsequent</td>
<td>No effects of significance, duration limited to construction</td>
</tr>
</tbody>
</table>

¹ Operations Phase 1: APL1
Operations Phase 2: APL2 (up to capacity)
Site related: Preparation of terrain and basic infrastructure (power supply, water, drainage, waste treatment facilities)
<table>
<thead>
<tr>
<th>Environmental component</th>
<th>Project Phase</th>
<th>Sources</th>
<th>Expected impact</th>
<th>Significance</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>settling of soil and subsidence of constructions</td>
<td>phase; probably limited to 100 metres radius</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contamination from accidental spills</td>
<td>No effect of significance</td>
<td>Accidental spills prevention</td>
</tr>
<tr>
<td>Operations Phase 1</td>
<td></td>
<td></td>
<td>Temporary lowering of the groundwater table; subsequent settling of soil and subsidence of constructions</td>
<td>No effects of significance, duration limited to construction phase; limited to probably only a few meters radius</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contamination from accidental spills</td>
<td>Slight</td>
<td>Accidental spills prevention and cleanup</td>
</tr>
<tr>
<td>Operations Phase 2</td>
<td></td>
<td></td>
<td>Permanent lowering of groundwater table</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contamination of groundwater due to storage, transport or accidental spills</td>
<td>Slight</td>
<td>Prevention of spills</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contamination of groundwater due to disposal of solid waste</td>
<td>Slight</td>
<td>Waste prevention and management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contamination of groundwater due to waste water infiltration</td>
<td>Slight</td>
<td>Waste water collection and treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unknown at this stage</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td>Operations Phase 2</td>
<td>Other activities (to be determined)</td>
<td></td>
<td>Permanent lowering of groundwater table</td>
<td>No effect of significance</td>
<td></td>
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<td></td>
<td>Contamination of groundwater due to disposal of solid waste</td>
<td>Slight</td>
<td>Waste prevention and management</td>
</tr>
<tr>
<td></td>
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<td>Contamination of groundwater due to waste water infiltration</td>
<td>Slight</td>
<td>Waste water collection and treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>Unknown at this stage</td>
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</tr>
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<td>Surface water</td>
<td>Construction</td>
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<td>None expected</td>
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<td>Project Phase</td>
<td>Sources</td>
<td>Expected impact</td>
<td>Significance</td>
<td>Mitigation</td>
</tr>
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<tr>
<td>Soils</td>
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<td></td>
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<td></td>
<td>Soil contamination due to accidental spills</td>
<td>Slight</td>
<td>Prevention and clean-up</td>
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<tr>
<td></td>
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<td></td>
<td>Soil erosion due to vegetation clearing</td>
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<td>Construction</td>
<td>Construction activities</td>
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<td>Operational activities</td>
<td>Permanent increase in noise</td>
<td>Moderate</td>
<td>Prevention and zoning advised</td>
</tr>
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<td></td>
<td>Operations Phase 2</td>
<td>Operational activities</td>
<td>Permanent increase in noise</td>
<td>Moderate</td>
<td>Prevention and zoning advised</td>
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15
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<tr>
<th>Environmental component</th>
<th>Project Phase</th>
<th>Sources</th>
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<th>Significance</th>
<th>Mitigation</th>
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<td>Other activities (to be determined)</td>
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<td>Permanent increase in noise</td>
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<td>Flora</td>
<td>Construction</td>
<td>Occupation of land and clearing of at least 160 ha of woodlands at the project site</td>
<td>Loss of a woodland with great potential for restoration of the vegetation to a primary ecosystem</td>
<td>Slight</td>
<td>No mitigation possible; Abuko buffer zone will partly compensate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Loss of a large area of woodland habitat amidst agriculture land and shrub savannah</td>
<td>Slight</td>
<td>No mitigation possible; Abuko buffer zone will partly compensate</td>
</tr>
<tr>
<td></td>
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<td>Habitat fragmentation and loss of a link between Tanbi and the Mandinari area, the forest parks and Tanji Bird Reserve.</td>
<td>Slight</td>
<td>No mitigation possible; Abuko buffer zone will partly compensate</td>
</tr>
<tr>
<td></td>
<td>Construction activities</td>
<td>Reduction of habitat quality as result of pollution</td>
<td>No effect of significance</td>
<td>Prevention of spills and clean-up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Human pressure (encroachment and settlement)</td>
<td>Attraction of people to neighbouring villages and resulting encroachment on Abuko Nature Reserve</td>
<td>High</td>
<td>Zoning, buffering, protection of the Abuko Nature Reserve</td>
<td></td>
</tr>
<tr>
<td>Operations Phase 1</td>
<td>Operational activities</td>
<td>Reduction of habitat quality as result of pollution</td>
<td>No effect of significance</td>
<td>Prevention; waste management plan required for each activity</td>
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<td>Human pressure (encroachment and settlement)</td>
<td>Attraction of people to neighbouring villages and resulting encroachment on Abuko Nature Reserve</td>
<td>High</td>
<td>Zoning, buffering, protection of the Abuko Nature Reserve</td>
<td></td>
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<td>Operations Phase 2</td>
<td>Operational activities</td>
<td>Reduction of habitat quality as result of pollution</td>
<td>No effect of significance</td>
<td>Prevention; waste</td>
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<td><strong>Environmental component</strong></td>
<td><strong>Project Phase</strong></td>
<td><strong>Sources</strong></td>
<td><strong>Expected impact</strong></td>
<td><strong>Significance</strong></td>
<td><strong>Mitigation</strong></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Human pressure (encroachment and settlement)</td>
<td>Attraction of people to neighbouring villages and resulting encroachment on Abuko Nature Reserve</td>
<td>High</td>
<td>Zoning, buffering, improved protection of the Abuko Nature Reserve</td>
</tr>
<tr>
<td>Fauna</td>
<td>Construction</td>
<td>Occupation of land and clearing of project site</td>
<td>Loss of a woodland with great potential for restoration of the vegetation to a primary ecosystem</td>
<td>Slight given the absence of similar habitats in the vicinity</td>
<td>No mitigation possible; Abuko buffer zone will partly compensate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loss of a large area of woodland habitat amidst agriculture land and shrub savannah</td>
<td>Slight given the absence of similar habitats in the vicinity</td>
<td>No mitigation possible; Abuko buffer zone will partly compensate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Habitat fragmentation and loss of a link between Tanbi and the Mandinari area, the forest parks and Tanji Bird Reserve.</td>
<td>Moderate given the absence of similar habitats in the vicinity</td>
<td>No mitigation possible; Abuko buffer zone will partly compensate</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>Attraction of people to neighbouring villages and resulting encroachment on Abuko Nature Reserve</td>
<td>No effect of significance</td>
<td>Condition: no temporary worker's settlements</td>
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<tr>
<td></td>
<td></td>
<td>Habitat fragmentation</td>
<td>Moderate given the absence of similar habitats in the vicinity</td>
<td>No mitigation possible</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction activities</td>
<td>Reduction of habitat quality as result of pollution</td>
<td>Slight</td>
<td>Prevention of spills and clean-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise</td>
<td>No effect of significance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human pressure (encroachment and settlement)</td>
<td>Habitat loss and reduction of quality</td>
<td>No effect of significance</td>
<td>Prevention; monitoring; zoning</td>
</tr>
<tr>
<td>Operations Phase 1</td>
<td>Operational activities</td>
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<td>Reduction of habitat quality as result of pollution</td>
<td>Slight</td>
<td>Prevention; waste management</td>
</tr>
<tr>
<td>Environmental component</td>
<td>Project Phase</td>
<td>Sources</td>
<td>Expected impact</td>
<td>Significance</td>
<td>Mitigation</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Spin-off activities in the area East of the Airport, producing (agriculture) supplies for export-oriented activities</td>
<td>Expansion and intensification of agriculture activities</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Installations for the supply of produce and raw materials for export and processing in the FZ</td>
<td>Construction of landing sites and connection road between Mandinari and the FZ</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human pressure (encroachment and settlement)</td>
<td>Habitat area reduction and loss of habitat quality</td>
<td>Unknown at this stage</td>
<td>Prevention; monitoring; zoning</td>
</tr>
<tr>
<td>Operations Phase 2</td>
<td>Operational activities</td>
<td>Reduction of habitat quality as result of pollution</td>
<td>Slight</td>
<td>Prevention; waste management plan required for each activity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spin-off activities in the area East of the Airport, producing (agriculture) supplies for export-oriented activities</td>
<td>Expansion and intensification of agriculture activities</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Installations for the supply of produce and raw materials for export and processing in the FZ</td>
<td>Construction of landing sites and connection road between Mandinari and the FZ</td>
<td>Unknown at this stage</td>
<td>Additional EIA required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human pressure (encroachment and settlement)</td>
<td>Habitat area reduction and loss of habitat quality</td>
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<td>Prevention; monitoring; zoning</td>
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<tr>
<td>Marine and Coastal Resources</td>
<td>Construction</td>
<td>Construction activities</td>
<td>Natural habitat destruction</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Groundwater extraction enhancing saline water intrusion</td>
<td>No effect of significance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emissions and pollution</td>
<td>No effect of significance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise</td>
<td>No effect of significance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loss of marine spawning and feeding areas</td>
<td>No effect</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction of Mandinari Trade Interface and upriver wharves</td>
<td>Erosion and accretion</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased traffic and disturbance to passing animals; Mandinari</td>
<td>Unknown at this stage</td>
<td>Additional EIA required for</td>
<td></td>
</tr>
<tr>
<td>Environmental component</td>
<td>Project Phase</td>
<td>Sources</td>
<td>Expected impact</td>
<td>Significance</td>
<td>Mitigation</td>
</tr>
<tr>
<td>------------------------</td>
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<td>------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>functions as corridor between Tanbi Nature Reserve and the Mandina mangroves</td>
<td>Dredging of access channel; local negative effect on benthic fauna</td>
<td>Slight</td>
<td>Use of appropriate vessels not requiring dredging</td>
</tr>
<tr>
<td></td>
<td>Human pressure (encroachment and settlement)</td>
<td>Habitat loss and reduction of quality</td>
<td>No effect of significance</td>
<td>Prevention; monitoring; zoning</td>
<td></td>
</tr>
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<td></td>
<td>Operations Phase 1</td>
<td>Operational activities</td>
<td>Groundwater extraction enhancing saline water intrusion</td>
<td>Unknown at this stage</td>
<td>Additional EIA required for specific activities</td>
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<td>Human pressure (encroachment and settlement)</td>
<td>Habitat area reduction and loss of habitat quality</td>
<td>No effect of significance</td>
<td>Prevention; monitoring; zoning</td>
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</tr>
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<td>Operations Phase 2</td>
<td>Operational activities</td>
<td>Groundwater extraction enhancing saline water intrusion</td>
<td>Unknown at this stage</td>
<td>Additional EIA required for specific activities</td>
</tr>
<tr>
<td></td>
<td>Human pressure (encroachment and settlement)</td>
<td>Habitat area reduction and loss of habitat quality</td>
<td>No effect of significance</td>
<td>Prevention; monitoring; zoning</td>
<td></td>
</tr>
</tbody>
</table>

| Land use<sup>2</sup> | Negative visual impact on the landscape | Slight | Integration in the landscape |

<sup>2</sup>The long term effect on land use can to an extent be anticipated, although much will depend on the specific investments and activities that will develop at the TGP site. The activities with the highest claim on land are agriculture processing activities, that occupy potentially large areas of agriculture land to supply the processing plants. Given the fact that export by air is a main option for agriculture produce, this option is likely to concern high-added value products such as cut flowers and speciality vegetables. These are crops that are typically low in land requirement. At the airport site, sufficient area is available for even considerable expansion of the FZ and for construction of processing and storage facilities. Other, bulk exports of lower value produce could develop as well, as could be the case with an increasing production and processing of fisheries produce.
<table>
<thead>
<tr>
<th>Environmental component</th>
<th>Project Phase</th>
<th>Sources</th>
<th>Expected impact</th>
<th>Significance</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archaeological, historic and cultural values</td>
<td>Construction</td>
<td>Sites of archaeological, historic or cultural values</td>
<td>Loss of archaeologically, historically or culturally important sites or information</td>
<td>No such sites are known to be present in the project area or the vicinity that can be expected to be influenced by the project or associated or spin-off activities</td>
<td>None required; however, attention should be paid during construction activities for the uncovering of potentially interesting or important sites</td>
</tr>
<tr>
<td>Social and Economic situation</td>
<td>Social effects</td>
<td>Construction</td>
<td>Improvement of conditions on the project site and changed land use (land occupation)</td>
<td>Squatters settlement</td>
<td>No effect of significance; no relocation required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Squatter resettlement</td>
<td>No effect of significance; no relocation required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-resident farmers livelihood affected</td>
<td>No effect of significance; no relocation required</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Attraction of workers from (Greater) Banjul and settlement or/near construction site</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Impact on nearby communities</td>
<td>No effect of significance; no relocation required</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Impact on nearby communities: increased immigration into these villages</td>
<td>Long-term and gradual changes; significance not to be assessed with any certainty at this time</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Impacted communities: increased immigration into these villages</td>
<td>Long-term and gradual changes; significance not to be assessed with any certainty at this time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operations Phase 1</td>
<td>Operational activities</td>
<td>Squatters settlement</td>
<td>No effect of significance</td>
<td>Monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Squatter resettlement</td>
<td>No effect of significance; no relocation required</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-resident farmers livelihood affected</td>
<td>No effect of significance; no relocation required</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Impact on nearby communities: Long-term and gradual changes; increased immigration into these villages</td>
<td>Long-term and gradual changes; significance not to be assessed with any certainty at this time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operations Phase 2</td>
<td>Operational activities</td>
<td>Squatters settlement</td>
<td>No effect of significance</td>
<td>Monitoring</td>
</tr>
</tbody>
</table>

At this point, there are no concrete plans in any direction regarding this sector, and the eventual implications on land use will be subject to an additional EIA process that will give due attention to cumulative effects.
<table>
<thead>
<tr>
<th>Environmental component</th>
<th>Project Phase</th>
<th>Sources</th>
<th>Expected impact</th>
<th>Significance</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-resident farmers’ livelihood affected</td>
<td>No effect of significance; no relocation required</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Impact on nearby communities: increased immigration into these villages; improved housing conditions; transformation of agriculture land into residential areas, leading to higher land prices</td>
<td>Long-term and gradual changes; significance not to be assessed with any certainty at this time</td>
<td>None required at this stage</td>
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<td>Economic effects</td>
<td>Construction</td>
<td>Construction activities</td>
<td>Formal employment creation and development collateral employment (petty vendors)</td>
<td>Moderately positive</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Eco-tourism decrease</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increased transport</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operations Phase 1</td>
<td>Operational activities</td>
<td>Formal employment creation and development collateral employment (petty vendors)</td>
<td>Moderately positive</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Eco-tourism decrease</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increased transport</td>
<td>No effect of significance</td>
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</tr>
<tr>
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<td>Operations Phase 2</td>
<td>Operational activities</td>
<td>Formal employment creation and development collateral employment (petty vendors)</td>
<td>Moderately positive</td>
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<tr>
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<td></td>
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<td>Eco-tourism decrease</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increased transport</td>
<td>No effect of significance</td>
<td></td>
</tr>
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<td>Human health</td>
<td>Construction</td>
<td>Construction activities</td>
<td>Dust nuisance</td>
<td>Slight, limited duration</td>
<td>Prevention and mitigation of dust formation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Noise</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operations Phase 1</td>
<td>Operational activities</td>
<td>Noise (air traffic)</td>
<td>Moderate</td>
<td>Zoning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Air pollution pressure</td>
<td>No effect of significance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operations Phase 2</td>
<td>Operational activities</td>
<td>Noise (air traffic)</td>
<td>Moderate</td>
<td>Zoning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Air pollution pressure</td>
<td>No effect of significance</td>
<td></td>
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</tbody>
</table>
3. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Environmental and Social Management Plan (ESMP) has for objective to ensure the compliance of all activities undertaken during the implementation and the operation of the TGP with the environmental and social safeguard requirements of the World Bank. Furthermore, it aims at integrating the environmental and social components of the project with existing initiatives and programmes in these fields, and by doing so it will strengthen the overall capacity of the country in environmentally and socially durable development. The plan consists of the mitigation, monitoring and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The plan also includes the actions needed to implement these measures.

The possible adverse impacts of the implementation and operation of the TGP have been analysed and presented in the Environmental Assessment (Ecolas, 2000). The information used therein has been reviewed and updated wherever required and the results, together with an indication of mitigation measures, have been presented higher in matrix format in part 2. The ESMP provides a clear plan for the identification of a set of responses to potentially adverse impacts, and for the determination of the requirements for ensuring that these responses are made effectively and in a timely manner. It also identifies and describes the means for meeting those requirements.

The ESMP is based on five major principles:

- The polluter pays for pollution and prevention of pollution
- The National Environment Agency is to play a central role in the environmental and social safeguarding of the project: regulation, supervision and enforcement
- Environmental and social safeguarding is to be incorporated as from the inception of all activities
- Private sector development for execution and implementation of environmental and social safeguarding related activities
- All activities undertaken within the framework of the TGP or subsequent developments are to be reviewed for their environmental and social impacts, and, when required, they need to be included in relevant effective Environmental and Social Management Plans aimed at offsetting, preventing, or mitigating any such negative impacts. Satisfying the environmental and social safeguard requirements is a condition for the proposed activities to be implemented.

The approach that lies at the base of implementation of the ESMP is shown in Figure 1. Central in the safeguarding of the environmental and social concerns is the National Environment Agency (NEA). The role of the NEA lies in assessing, controlling and enforcing that all activities related to the TGP are environmentally and socially sound. To this effect, the NEA will require the capacity to review all proposed activities, assess all potential environmental and social impacts, liaise and co-ordinate with other authorities that have responsibilities in the relevant areas and subjects, and to issue specific measures to developers of proposed activities to prevent or reduce any negative impacts. Furthermore, it will require the capacity to monitor effects of ongoing activities and the effectiveness of the ESMP.

Regulating, monitoring and enforcing requires the presence of a clear reference frame that is used to assess activities and their impacts against. NEA is the instance that should identify the additional needs, propose detailed regulation and ensure its implementation.
Another basic principle in the ESMP is that of having the polluter pay for the pollution or environmental and social degradation or problems the activities may cause. This includes not only the offsetting, remediation, or prevention of negative impacts but also to contribute to whatever is required to effectively analyse, study and monitor possible impacts on the natural and social environment.

Fig. 1. ESMP Flow chart. The term 'developer' refers to the instance undertaking the specific activity, such as DOSTIE/GIPFZA or a private investor. Final arrangements on this depend on the detailed arrangements on implementation that will be the subject of a Memorandum of Understanding to be agreed between NEA and DOSTIE/GIPFZA.

In the first stage of the ESMP, the proposed activities are submitted to the NEA for environmental and social screening. This implies an assessment of the nature and magnitude of the potential environmental and social impacts of the proposed activity, and their coverage by the EA and ESMP for the TGP. At this point, NEA will co-ordinate with other relevant agencies and authorities dealing with pertinent impacts that are expected from the proposed activity.

When the proposed activity is found to have no potential environmental or social impacts of significance or when these potential impacts are found to be sufficiently covered by the TGP ESMP,
the NEA will agree with the developer of the activity on specific mitigation measures to be incorporated in the activity and on a monitoring plan to assess the environmental and social impact and the effectiveness of the mitigation. The costs for these are to be born by the developer, who will also undertake the necessary steps to ensure that monitoring is undertaken according to the specifications and quality requirements of the NEA.

In case the proposed activity is found to have potentially significant negative environmental or social impacts that are not (sufficiently) covered by the TGP ESMP, the NEA will require the developer to carry out an additional assessment of the environmental and social impacts and to prepare an additional ESMP for the proposed activity according to NEA requirements. Important in this respect is the integration of the additional management, mitigation and monitoring measures with the ESMP for the overall project.

The additional EIA and ESMP

The process for the additional EIA and ESMP for specific activities is based on the principle that the environmental and social safeguarding of the activity is incorporated from its very inception and becomes a genuine element of the activity. In this way, effective and efficient management of the environmental and social impacts is possible.

The flow chart of Figure 2 shows the different phases and corresponding activities to be undertaken in the preparation of an additional EIA and ESMP.

Identification

The initial steps of the additional EIA process have been briefly discussed higher as part of the TGP ESMP. The developer of an activity submits the concept of the envisaged activity (or a pre-feasibility study if appropriate) to the NEA for screening of the potential environmental and social impacts. NEA consults and co-ordinates this screening with relevant instances and authorities (e.g. Department of Public Health, Department of Parks and Wildlife Management, Municipal Council, Ports Authority, Fisheries Department) in order to effectively screen all aspects of the proposed activity.

This results in the classification of the proposed activity under one of three classes, which are based on the categories used by the World Bank as part of its environmental assessment process (World Bank, Operational Policy 4.01):

Class A:

Class A activities are those that are expected to have significant adverse impacts that may be sensitive, irreversible, diverse, or unprecedented. These impacts may affect an area broader than the actual sites. Attributes of activities that classify them as class A include direct pollutant discharges large enough to cause degradation of air, water or soil; large-scale physical disturbance of the site or surroundings; extraction, consumption or conversion of substantial amounts of forest and other natural resources; measurable modification of hydrological cycles; use of hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances.

Class B:

Class B activities are those that have impacts that are less significant than class A activities, and that are site-specific; few if any of them are irreversible; and remedial measures can be easily
designed. Typical class B activities entail rehabilitation, maintenance, or upgrading, rather than new construction.

Class C:
Class C activities are those that entail negligible or minimal direct disturbance to the physical setting, or, that would classify under classes A or B but that are sufficiently covered by the TGP EIA and ESMP. Activities classified as class C are not subject to additional impact assessment.

Activities with multiple components are classified according to the component with the most significant adverse environmental or social impact.

For those activities classified as class A or B, a scoping process is undertaken to identify key issues and develop the terms of reference (TOR) for the additional environmental and social assessment. At this stage, it is essential to identify more precisely the likely environmental impacts and to define the activity's area of influence. As part of this process, information about the activity and its likely environmental and social effects are disseminated to the public (local communities and non-governmental organisations (NGOs)), followed by consultations with representatives of these groups. The main purpose of these consultations is to focus the impacts assessment on issues of concern at the local level.

When the scoping process is completed, NEA and the developer agree on the TOR for the additional environmental and social assessment, and a team is selected for the implementation of the study. The practical arrangements for the execution of the assessment study are the responsibility of the developer, the NEA guides the developer throughout the process in order to assure that the EIA is done in the most cost-effective manner.

The additional impact assessment study should focus on elements that are new and that are not part of the TGP EIA and ESMP.

The additional EIA report should comprise the following chapters:

a) Executive summary

b) Policy, legal and administrative framework (complementing if required what is available in the TGP EIA and ESMP)

c) Activity description

Description of individual activity components

To this end, first the construction phase will be described. This phase may have important environmental aspects in its own respect. Then, the operations phase of the activity is described.

Construction phase
The construction will probably take place according to an overall concept for the entire TGP. For this reason, construction elements are treated in common, except in case of project specific construction aspects.

Data will be collected and reported regarding:
- land use requirements for construction purposes (including map);
- construction time needed for every activity component;
- the construction method of every component (technical characteristics) and machinery to be used;
- type, source and quantities of raw materials, water and energy and other resources that will be required;
- transport infrastructure needed and transport density increase (of people and materials);
- the required temporary housing amenities and the need for a resettlement plan;
- provisions taken for waste collection and disposal;
- provisions taken for waste water management;
- the need for lowering of the water table (pump discharge, subsurface water level);
- source of construction materials: sand, gravel, stone (do they come from the inner country upriver?) including map;

Phase of operation
The description consists of:
- Physical characteristics, capacities and peripheral facilities:
  - physical, ecological and social characteristics of the activity and its surroundings (geographical situation, topography, transport mode, ...);
  - description of the final infrastructure: land use, location relative to other features, view, expropriation needs;
  - major components and activities of the activity under normal operation procedures;
  - production capacity, transport activities, utilities such as energy and water needs and supply methods;
  - material flows (where relevant);
  - overview of the measures (technical, organisational) already taken to prevent or reduce environmental impact (waste disposal facilities, sewerage and sewage treatment).
- Expected emissions, residues and nuisance (per activity component)
  - Air pollution
    - list of possible sources of emissions and characteristics of emission sources;
    - overview of emissions (quality and quantity) under normal process conditions;
    - evaluation of the risk in case of incidents;
    - calculation of possible emissions in case of incidents;
  - Waste water
    - sources and causes of waste water;
    - quality and quantity of waste water and the treatment method foreseen;
    - possible discharges caused by incidents (e.g. accidental spills from sewage).
  - Soil and ground water pollution
    - risk analysis of the possible soil pollution taking based on the nature of the activities;
    - indication of the most important risks and estimate of the possible quantities of the different substances which could be discharged to soil and ground water.
  - Waste/residues
    - inventory of the quality and quantity of solid waste streams produced;
    - disposal methods foreseen;
  - Noise emissions
    - estimation of possible noise emissions caused by the activities.
When measured data are not available, emission factors will be used of similar installations and activities, as well as literature data and empirical factors, in order to make calculations based on activity characteristics. In some cases, production characteristics will not be sufficiently known to estimate emissions. In that case, the acceptable emission will be determined, taking into account the characteristics of the surroundings (see further).

**Description of possible alternatives**

In an environmental impact assessment, the possible alternatives should always be evaluated. Indeed these alternatives may have an environmental impact that is less significant. The following types of alternatives should be considered:
- the zero-alternative (without the establishment of the proposed activity);
- alternative locations;
- construction and process alternatives.

This section thus covers:
- a motivation for the selection of locations for each activity component;
- definition and description of the possible alternative locations;
- list and description of possible construction and process alternatives studied.

**d) Baseline data (complementing if required what is available in the TGP EIA and ESMP)**

**e) Impact assessment**

In this chapter, all possible effects of the proposed activity will be identified (so-called ‘scoping’), based on activity characteristics on the one hand and characteristics of the environment on the other. Then, the possible impacts are described and assessed. Particular attention should be paid to cumulative effects of activities, even if their marginal contribution is small or negligible.

**Identification and overview of the potential effects (scoping)**

To this end, the relationships between the activities and effect sources will be defined by means of impact matrices. Potential effects include direct as well as indirect and secondary effects. Positive as well as negative effects will be considered. These matrices will be drawn up for each activity component both for construction and operations phases.

Once the potential effects have been identified, these will be discussed with the interested parties and authorities as well as with NGOs and with the local population. Such public consultation is essential to:
- reach consensus about the significant effects and the depth of further investigations;
- understand the attitude/appreciation of the local population toward the proposed activity and their concerns and questions.

**Description and assessment of the impacts**
The description and assessment of the impacts will be carried out per activity component both for construction and operations phases. The assessment will be based as much as possible on quantitative criteria. The assessment criteria will be primarily based on environmental quality objectives, guide values and standards of Gambian legislation (whenever in place). The significance of the effects will be judged taking into account reversibility, duration, magnitude, etc.

For the description and assessment the following scheme will be followed:
- determination of the contribution of the activity to environmental effects;
- definition of assessment criteria;
- assessment of the environmental effect.

Next an overview is presented of all aspects playing a role in the effect description and assessment. Not all aspects are relevant for each activity component.

- Climate and air quality
  - Determination of the contribution to air quality (immission situation) of the different activity components:
    - dust formation: falling dust;
    - general air quality parameters: suspended solids, SO\(_2\), NO\(_x\), CO;
    - specific air quality parameters: volatile organic compounds, heavy metals, etc. (whenever relevant).
  
  In order to estimate the contribution to the immission situation in the area, the emission characteristics and climate data will be fed to an air quality model. Thus, iso-concentration-lines will be obtained and major receptor areas will be defined.
  - Comparison of the expected air pollution with air quality standards, objectives and guide values;
  - Evaluation of the importance and significance of the air pollution based on these assessment criteria.

- Water and aquatic resources
  - Ground water and surface water
    - determination of the ground water use of the individual project elements and modelling of the impact on the ground water table (ground water models such as Modflow, Modpath);
    - determination of the potential pollution sources of the groundwater and assessment of their potential contribution to pollution;
    - quantitative determination of the surface water use;
    - quantitative determination of the contribution of the different activity components to surface water pollution;
    - calculation and estimation of modified land- and water use on the hydrological characteristics and pollution level of surface waters;
    - calculation of the impact of planned waste water treatment infrastructure on the pollution reduction;
    - comparison of qualitative and quantitative impacts of the activity components with assessment criteria (surface water quality objectives and guide values, ground water quality standards and guide values, hydrological requirements, ...);
    - evaluation of the importance and significance of water use, modification of the hydrographical network and impact on water quality, based on the assessment criteria.
  - Marine water and sediments
- identification and evaluation of the erosion and accretion effects;
- impact of port operations development and maritime traffic development on the marine and Gambia River ecosystem. In particular this will include:
  - risk evaluation of present and future impact of ship discharges (oily ballast, bilge water, ship waste (from collection, to treatment and final disposal)) on the natural environment
  - dredging activities (if increased);
  - run-off of pollutants;
  - use of anti-fouling substances and paints;
  - discharges of domestic and industrial waste water;
- definition of assessment criteria (water quality objectives and ecotoxicological objectives) and assessment of the importance and significance of the effects on the marine aquatic environment.

• Soil and waste
  - identification of data concerning the influence of ground works on the soil composition and structure;
  - identification and evaluation of erosion and accretion effects;
  - inventory and determination of the surface area of the areas which have become sensitive to erosion as a result of the activity components;
  - determination of the expected waste production for different waste types: domestic waste, industrial waste, dangerous waste;
  - evaluation of the planned waste disposal methods;
  - definition of assessment criteria (soil quality objectives and standards) and assessment of the soil pollution risk as a result of the project activities and the waste management.

• Noise
  - prognosis of the expected noise levels in the neighbourhood of the individual activity components based on extrapolations of noise pressure levels; model calculations are based on the noise levels of the equipment used for construction activities and the process apparatus and traffic in the phase of presence and use;
  - definition and inventory of zones with noise nuisance near the individual activity components;
  - definition of noise quality criteria and assessment of the importance and significance of the effects.

Remark: It is likely that the noise levels during construction, originating from equipment, etc., are not sufficiently known. In that case, the additional EIA will depart from the noise quality requirements to calculate the maximum permissible contribution of the activity elements to noise pollution, using specific models.

• Fauna and flora
  - Terrestrial and freshwater fauna and flora
    - inventory and surface area calculation of nature reserves or protected areas for fauna and flora that are lost or drastically changed;
    - inventory and surface area calculation of ecologically valuable areas that are lost or changed;
- evaluation of the impact of these changes on the possible loss of rare or ecologically valuable plant communities; these changes can be caused by direct effects (e.g., deforestation, levelling) or by indirect effects (e.g., lowering of ground water table, air pollution);
- quantitative estimation of the area where terrestrial organisms are likely to be disturbed as a result of project activities: migration disruption, influences from air pollution, water pollution, noise;
- determination of possible changes of aquatic biota caused by changes of hydrological conditions;
- evaluation of possible effects of water pollution on the aquatic biota;
- determination of assessment criteria (rarity, surface loss, species loss, reduction percentage in relation to rarity, ecotoxicological criteria) and assessment of the importance and significance of the effects.

- Marine fauna and flora
- inventory and quantification of the loss of relevant and/or vulnerable marine communities (breeding locations, benthos populations) as a direct consequence of the individual activity components;
- risk evaluation and estimation of the damage/modification of the relevant marine communities as a result of the effects of the activity components:
  - ship discharges;
  - dredging activities (if increased);
  - run-off of pollutants.
  - use of anti-fouling substances and paints;
  - discharges of domestic and industrial waste water;
- estimation of the possible changes of the fish population (direct and by damage to reproduction sites);
- definition of assessment criteria (surface area loss, species loss, ecotoxicological criteria, reduction percentage in relation with rarity) and assessment of the importance and significance of the effects.

- Land use and landscape aspects
  - inventory and determination of surface area of land use changes as a direct result of the individual activity components;
  - identification and delimitation of indirect land use changes as a result of the effects of the individual activity components e.g. agricultural limitations caused by hydrological changes or erosion;
  - inventory of valuable landscape elements lost as a consequence of the individual activity components;
  - identification and description of changes of the landscape characteristics: inventory of areas with obstructed/damaged view, changes in physical planning;
  - definition of assessment criteria (index of change, landscape quality indices) and discussion and assessment of the importance and significance of the effects.

- Archaeological, historical and cultural values
  - inventory and assessment of direct losses of sites with archaeological, historical and cultural value;
  - identification and assessment of indirect losses of sites with archaeological, historical and cultural value;
- definition of assessment criteria (quantitative loss, loss of value, loss of surface area, etc.) and assessment of the importance and significance of the effects.

- "Man" and his social-economic living conditions
  - Living quality
    - social effects on local people, including resettlement, changes in lifestyle
    - risk analysis of the potential direct effect of the individual activity components on human health (specifically for the industrial developments). This will be based on expected immission concentrations, an analysis of exposure routes and toxicological data in relation to the population structure and specific groups at risk;
    - estimation and evaluation of the socio-economic significance of the activity for the population with regard to modified employment possibilities and land use possibilities;
    - estimation of expected changes in tourism and agriculture as a result of the activity effects (habitat loss, increased mobility, landscape changes, etc.);
    - evaluation of potential nuisance due to traffic congestion.
  - Use of resources
    - quantitative evaluation of land use changes on the development of land use and professional activities of the population:
      - agriculture;
      - fishery;
      - residential areas;
      - tourism.
    - quantitative evaluation of facilities for drinking water supply, energy supply and waste management and their effect on the human well-being;
    - evaluation of water management and drainage/irrigation facilities in relation to the expected land use limitations/expansions;
    - definition of assessment criteria (toxicological criteria, change in use percentage, duration of the change, consultation with local population, etc.) and description and assessment of the significance and the importance of the impacts on human well-being and use of resources.

The assessment of the impact on socio-economic living conditions will make use of results of polls which will be held among the local population.

f) Analysis of alternatives

The analysis of alternatives assesses investment alternatives from an environmental perspective. This includes a systematic comparison of possible alternatives for the proposed activity for design, location, technology and operations in terms of their environmental impacts, capital and recurrent costs, suitability under local conditions, and institutional, training and monitoring requirements. This will provide a basis for the selected alternative.

g) Mitigation or management plan (to be integrated with TGP ESMP)

In this chapter, all measures to be taken during planning, implementation and operation of the proposed activity is presented as a coherent plan in order to eliminate or offset adverse environmental impacts or reduce them to acceptable levels. The plan identifies feasible, cost-effective measures and estimates their potential environmental impacts, capital and recurrent
costs, and institutional, training and monitoring requirements. The plan should consider compensatory measures if mitigation is not feasible or not cost-effective.

h) Environmental and social monitoring plan (integrated with TGP ESMP)

This plan specifies the type of environmental and social monitoring, who is responsible for the implementation, how much it will cost and what other inputs, such as training, are necessary.

i) Public consultation

At two stages of the additional environmental and social impacts assessment, consultation of stakeholders, affected groups and NGOs is required: during the scoping phase when the range of possible impacts is determined and once a draft report is prepared.

Additional EIA and ESMP are reviewed by NEA in terms of compliance with national legislation and the environmental and social safeguard requirements of the World Bank. Particular attention is paid in this review to the integration of the additional environmental and social management plan with the TGP ESMP. In case of class A activities, NEA will organise public consultation on the findings of the additional EIA and on the recommendations that are proposed in the ESMP.
Fig. 2. Additional EIA/ESMP flow chart
When the review of the additional EIA and ESMP has been satisfactorily completed by NEA, the developer incorporates the environmental and social provisions in the implementation and operations plans for the proposed activity, prior to initiating the implementation.

When the implementation starts, the environmental impacts and the effectiveness of the mitigation measures are monitored according to the monitoring element of the additional ESMP.

3.1. Mitigation

In this chapter, the mitigation measures that have been indicated in the environmental and social impact matrix are elaborated, and a cost estimation is provided.

3.1.1. The mitigation plan

Table 3 presents the mitigation plan for the ESMP. The implementation of the ESMP by GIPFZA should be done in accordance to the legal requirements and standards (national if available, World Bank\textsuperscript{3} if no such national legislation exists).

\textsuperscript{3} See World Bank’s *Pollution prevention and abatement handbook 1998: toward cleaner production*
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<th>Issue</th>
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| Dust formation            | Construction | Reduction of dust production to acceptable levels, i.e. not causing nuisance to residents or damage to property or habitats in the vicinity of the construction site | Preventing dust formation:  
  - Spraying of surfaces (construction site, access roads) with water;  
  - Rinsing truck tires  
  - Training of construction site supervisors and drivers / machine operators  
  - Establishment and enforcement of speed limits in the construction zone  
  - Planning of activities as to reduce the area subjected to dust immission  
  - Development of hardened roads prior to construction of residences | Complainants; visual inspection | Operator | Throughout | Good practice measures, no additional cost expected. |
| Odour from waste          | Construction | Prevention of odour emission from waste generated during construction | Implementing the waste management plan | Complainants, olfactory inspection | Operator | Throughout | The cost of complying with the requirements shall be at the contractor's own expense and should be included in the estimates |
| Operations                | Construction | Prevention of odour nuisance from FZ activities | Creating a 200 metres wide buffer zone between the industrial sites and residential areas | Complainants, olfactory inspection | Operator | Planning and implementation | The cost of complying with the requirements shall be at the contractor's own expense and should be included in the estimates |
| Odour from agriculture produce processing | Operations | Prevention of odour emission from agriculture produce processing | Implementing the waste management plan | Complainants, olfactory inspection | Operator | Throughout | The cost of complying with the requirements shall be at the contractor's own expense and should be included in the estimates |
| Operations                | Operations | Prevention of odour immission | Creating a 200 metres wide buffer zone between the industrial sites and residential areas | Complainants, olfactory | Operator | Planning and implementation | The cost of complying with the requirements shall be at the contractor's own expense and should be included in the estimates |

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| Prevention of odour immission     | All         | Prevention of odour emitting plants and installations on the site away from residential areas | - Locating odour emitting plants and installations on the site away from residential areas  
   - Activity-specific odour emission preventing     | Complaints, olfactory inspection                                                                 | Operator | As determined by the additional EIA and ESMP | As determined by the additional EIA and ESMP |
| Groundwater contamination from accidental spills | All         | Prevention of groundwater contamination from accidental spills      | Preventing of accidental spills:    
   - Due attention to storage of waste oil and operational procedures for engine maintenance  
   - Following operational guidelines for use and storage of potentially polluting products  
   - Cleaning-up of accidental spills:    
     - Awareness building and training of staff and contractors  
     - Effective clean-up facilities, equipment and supplies available and accessible on site  
     - Report incidents to site supervisor for follow-up | Visual inspection for obvious spills possibly resulting in groundwater contamination; Groundwater analysis (monitoring) | Operator | Throughout | Good practice measures, no additional cost expected.  
Cost for clean-up equipment commensurate with size and polluting nature of specific activities |
| Groundwater contamination due to storage, transport or accidental spills | Operations | Prevention of groundwater contamination from storage, transport or accidental spills | Preventing of spills, activity specific:    
   - Reducing the occurrence of leaks, spills and losses through preventive measures, to be specified when operation and storage methods are known  
   - Locating liquid product storage tanks on an impervious surface with a low wall to contain possible spills  
   - Locating process unit areas on impervious surfaces to contain product spills or losses  
   - Locating solid waste collection zones on impervious surfaces  
   - Avoiding locating storage tanks, process units and solid waste collection areas in the vicinity of hand-dug wells | Visual inspection for obvious spills possibly resulting in groundwater contamination; Groundwater analysis (monitoring) | Operator | Throughout | Good practice measures, no additional cost expected.  
Cost for clean-up equipment and prevention measures commensurate with size and polluting nature of specific activities |
| Groundwater contamination due to disposal of solid waste | Operations | Prevention of groundwater contamination from solid waste disposal | Preventing and management of solid waste:    
   - Implementing the waste management plan | Groundwater analysis (monitoring) | Operator | Throughout | The cost of complying with the requirements shall be at the operator's own expense and should be included in the |
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| Groundwater contamination due to waste water infiltration           | Operations  | Prevention of groundwater contamination from waste water infiltration | • Issuing permits with specific effluent standards for discharging on land  
• Quality control of industrial effluents  
• Implementing the waste management plan | Groundwater analysis (monitoring)                                                                                                                                   | Operator      | Throughout      | The cost of complying with the requirements shall be at the operator's own expense and should be included in the estimates |
| Permanent alterations to soil composition and structure             | Construction| Prevention of permanent alterations to soil composition and structure | • Reducing the use of very heavy machinery and equipment;  
• Planned and consequent moving of soil layers (digging activities)                                                                   | Soil composition and structure                                                                                                                   | Operator      | Planning and construction | Good practice measures, no additional cost expected.                  |
| Soil contamination due to accidental spills                          | All         | Prevention of soil contamination from accidental spills                | Preventing of accidental spills:  
• Due attention to storage of waste oil and operational procedures for engine maintenance  
• Following operational guidelines for use and storage of potentially polluting products  
Cleaning-up of accidental spills:  
• Awareness building and training of staff and contractors  
• Effective clean-up facilities, equipment and supplies available and accessible on site  
• Report incidents to site supervisor for follow-up | Visual inspection for obvious spills possibly resulting in soil contamination; Soil analysis (monitoring)                                                                 | Operator      | Throughout      | Good practice measures, no additional cost expected.                  |
| Soil contamination due to storage, transport or accidental spills of products used during production | Operations  | Prevention of soil contamination from storage, transport or accidental spills | Preventing of spills, activity specific:  
• Reducing the occurrence of leaks, spills and losses through preventive measures, to be specified when operation and storage methods are known  
• Locating liquid product storage tanks on an impervious surface with a low wall to contain possible spills  
• Locating process unit areas on impervious surfaces to contain product spills or losses | Visual inspection for obvious spills possibly resulting in soil contamination; Soil analysis (monitoring)                                                                 | Operator      | Throughout      | Good practice measures, no additional cost expected.                  |
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| Soil contamination due to disposal of waste        | Operations | Prevention of soil contamination from solid waste disposal            | • Locating solid waste collection zones on impervious surfaces  
• Avoiding locating storage tanks, process units and solid waste collection areas in the vicinity of hand-dug wells | Soil analysis (monitoring) | Operator     | Throughout       | The cost of complying with the requirements shall be at the operator’s own expense and should be included in the estimates |
| Soil contamination due to waste water discharge   | Operations | Prevention of soil contamination from waste water discharge         | • Preventing and management of solid waste  
• Implementing the waste management plan | Soil analysis (monitoring) | Operator     | Throughout       | The cost of complying with the requirements shall be at the operator’s own expense and should be included in the estimates |
| Noise                                              | Operations | Prevention of noise immission of excessive levels                    | • Issuing permits with specific effluent standards for discharging on land  
• Quality control of industrial effluents  
• Implementing the waste management plan | Soil analysis (monitoring) | Operator     | Throughout       | The cost of complying with the requirements shall be at the operator’s own expense and should be included in the estimates |
| Noise                                              | Operations | Prevention of noise immission of excessive levels                    | • Creating a buffer zone of at least 200 metres between the borders of the industrial estates and any residential area; these buffer zones – the case being – should be planted with appropriate vegetation to reduce the noise levels and propagation; buffer zones should be part of the FZ  
• Locating the most noisy installations as far away as possible from residential and other noise-sensitive areas | Complaints; Noise measurements (monitoring) | Operator     | Project planning and implementation |                                                                     |
<p>| Fauna and                                          | Operations | Prevention of Waste management plan                                | Studying the environmental and social impact of proposed activities and issue traffic control and management instructions | Complaints; Noise measurements (monitoring) | Operator     | Throughout       | The cost of                                                               |</p>
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<tr>
<td>Flora</td>
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<td>habitat degradation by pollution</td>
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<td>complying with the requirements shall be at the operator's own expense and should be included in the estimates</td>
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<td>Prevention of habitat loss and degradation due to human encroachment and settlement</td>
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<td>Preventing the settlement of squatters; zoning of areas in terms of intended use</td>
<td>Degradation or loss of habitat by human encroachment and settlement</td>
<td>Operator, municipality</td>
<td>Throughout</td>
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<tr>
<td>Prevention of habitat degradation by pollution</td>
<td></td>
<td>Preventing spills and clean-up; Waste management plan</td>
<td></td>
<td></td>
<td>Operator</td>
<td>Throughout</td>
<td>The cost of complying with the requirements shall be at the operator’s own expense and should be included in the estimates</td>
</tr>
<tr>
<td>Prevention of encroachment of people from neighbouring villages on Abuko Nature Reserve</td>
<td></td>
<td>Zoning, buffering and increased protecting of the Abuko Nature Reserve.</td>
<td>Encroachment and settlement</td>
<td>Operator and DPWM</td>
<td>Throughout</td>
<td></td>
<td>The cost for erecting a fence around Abuko Nature Reserve Buffer zone and sensitisation and public awareness campaign</td>
</tr>
<tr>
<td>Marine and coastal resources</td>
<td>Prevention of resources degradation due to immissions and pollution</td>
<td>Preventing spills and clean-up</td>
<td>Water quality and pollution levels</td>
<td>Operator</td>
<td>Throughout</td>
<td></td>
<td>Good practice measures, no additional cost expected. Cost for clean-up equipment</td>
</tr>
<tr>
<td>Issue</td>
<td>Phase</td>
<td>Target</td>
<td>Activity</td>
<td>Indicator</td>
<td>Responsible</td>
<td>Timing</td>
<td>Cost</td>
</tr>
<tr>
<td>-------</td>
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<td>------</td>
</tr>
</tbody>
</table>
| Prevention of habitat loss and degradation due to human encroachment and settlement | | | • Preventing human settlement  
• Monitoring human settlement  
• Zoning | Encroachment and settlement | Operator/Municipality | Throughout | and prevention measures commensurate with size and polluting nature of specific activities |
| Prevention of coastal erosion due to construction activities | | | Preventing an aggravation of the coastal erosion  
Locating sites such as to take in consideration current rates of coastal erosion | Coastal erosion rates | Operator | Throughout | No additional cost anticipated |
<p>| Prevention of habitat degradation by pollution | | | Waste management plan | | Operator | Throughout | The cost of complying with the requirements shall be at the operator’s own expense and should be included in the estimates |
| Construction | | | As determined by the additional EIA to be carried out for the specific activities in the FZ and the spin-off activities outside the TGP-area | To be determined | Operator | Planning | To be determined |</p>
<table>
<thead>
<tr>
<th>Issue</th>
<th>Phase</th>
<th>Target</th>
<th>Activity</th>
<th>Indicator</th>
<th>Responsible</th>
<th>Timing</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Prevention of local negative impact on benthic fauna due to access channel dredging</td>
<td>Using appropriate vessels not requiring dredging for the supply of goods</td>
<td></td>
<td>Operator</td>
<td>Throughout</td>
<td>No additional cost anticipated</td>
</tr>
</tbody>
</table>
| Land use | All   | Prevention of negative impact from buildings and constructions on the landscape | • Integrating the buildings and constructions in the landscape  
• Landscaping of the project site, using as much as possible existing landscape elements (in particular trees). Activities must leave undisturbed as many trees as possible, in particular the netto and raphia palm | Visual pollution | Operator     | Planning, implementation | To be determined           |
|       | All   | Prevention of negative impact on bird-watching eco-tourists            | • Incorporating bird-friendly elements in the layout of the project area  
• Facilitate access to places of interest on the project site for eco-tourists                                                                                                                         |           | Operator     | Throughout   | To be determined           |
| Others, as determined in the additional environmental and social impacts assessments | | | | | | | |

41
3.1.2. **The Waste Management Plan**

3.1.2.1. **Introduction and objectives**

- **Waste generation:**

  *Construction phase:*
  Building activities during construction phase will temporarily generate small amounts of waste, in particular building materials.

  *Operational phase:*
  The following types of activities are expected to be developed in the Trade Gateway Project:
  - light assembly;
  - electronics;
  - TV/computer assembly;
  - trading and packaging;
  - agricultural produce export;
  - food and fish processing;
  - cotton spinning.

  Considering these types of activities and assuming total production of the project will not exceed 30,000 tonnes a year, a maximum of 3,000 tonnes waste a year will be generated, mainly consisting of:
  - packaging materials (papers, cardboard);
  - organic matter;
  - glass;
  - lubrication oil and hydraulic fluids from machinery;
  - spent acid.

- **Objectives:**
  The actual amounts and types of waste depend on the types of industry that will be developed. At this stage of the project, the industrial estate lay-out is merely conceptual and neither the types of industries nor the size of the plants is known. Nevertheless, a rather generic overview of waste management needs is given below, aiming at the following objectives:
  - minimising hazardous waste production and proper treatment of all types of industrial wastes, for the protection of soil and groundwater pollution and for the protection of human health;
  - ensuring proper collection and disposal conditions for solid wastes in order to prevent soil, air and water pollution, to avoid nuisance and to assure a clean environment.

3.1.2.2. **Management planning and measures**

Waste collection and disposal is actually rather poorly organised in the Gambia. Municipalities are generally responsible for collection (also partly carried out by private companies); waste is generally disposed in uncontrolled open dump sites. Therefore the TGP waste management cannot be seen independently from the national waste management context in the Gambia. The estimated waste production is indeed quite low in relation to the existing waste problems. Nevertheless, waste should be minimised, collection should be properly organised and treatment and disposal should be carried out in a safe manner.
In particular industrial waste (such as hydraulic fluids and spent acid), presently virtually not existing in the Gambia, should be taken care of. Within this framework the proposed waste management plan is composed of a mix of actions aiming partly at short term and partly at long term results. Some of these actions are beyond the scope of the TGP. The actions can be summarised as follows:
- proper waste collection and disposal during construction;
- optimisation of knowledge on waste management needs during operation;
- minimisation and handling of hazardous waste;
- development of a master plan for waste management.

**Proper waste collection and disposal during construction**

**Action:**
Collection of solid wastes should be organised during construction; to that aim the following measures should be undertaken:
- daily collection of solid wastes and construction wastes;
- provision of containers at the construction site and daily collection of the content of the containers;
- disposal of the waste at existing disposal sites.

**Responsibilities and cost:**
This action should be organised under the responsibility of the municipality. It can be seen as a service to the operator and charged at cost.

**Optimisation of knowledge on management needs during operation**

**Action:**
Today, only a very general assumption on the expected waste production can be made. It is obvious that a more detailed knowledge on the kinds and amounts of wastes is needed to assure proper management. To that aim it is proposed that each operator should prepare a document to be submitted to NEA for approval, indicating:
- expected waste streams to be classified and quantified (general solid waste, industrial waste : hazardous / non-hazardous);
- measures foreseen to minimise the quantity of waste;
- collection and disposal methods foreseen.

**Responsibilities:**
The operator is responsible for this action, which should take place before the operation phase.

**Minimisation and handling of hazardous waste**

At this stage it is not clear whether or not hazardous waste will be produced as a result of the TGP. Nevertheless it is likely that at least a small amount of hazardous wastes may be produced. So far the Gambia has no tradition in handling hazardous waste. Therefore the following management steps are to be recommended if from the waste inventory it appears that hazardous waste production is to be expected:
- the operator should demonstrate that Best Available Technology is used to minimise hazardous waste production;
- the operator should provide information on properties, treatment and disposal for the hazardous wastes;
- the authorities should use the information to set up an inventory on hazardous waste production (beyond the scope of the TGP);
- based upon the expected production quantities of different kinds of hazardous waste, a study should be carried out on the technical/economic feasibility of treatment and disposal facilities.

Responsibilities and cost:
The operator is responsible for providing the information needed.
The inventory and feasibility study for the handling of hazardous waste is recommended to be carried out under the responsibility of NEA.
These actions ought to be implemented as soon as the potential operators are identified.
It is recommended that a waste management unit is installed at NEA (see also further).
The cost for study work within the framework of this action may be estimated at 50 000 USD.

Development of a master plan for waste management

The present (limited) management of waste in The Gambia should be improved. Although this is beyond the scope of the TGP needs, this project may be the leverage to improve the general picture. Therefore it is proposed to develop a master plan for waste management based upon the planning steps as defined in the World Bank Technical paper NR. 93 (1983).
This should include:
- the definition of the scope: quantities and types of wastes to be considered, responsibilities, time horizon, geographical area;
- determining objectives and constraints;
- key questions: existing quantities, composition and location, facilities needed, legislation;
- collection of information;
- evaluating the existing situation;
- options for the area;
- site selection.

Primordial questions concern the types and quantities of the existing waste production and a reasonably adequate forecast of future changes. Therefore a co-ordinated effort of all involved responsible parties i.e. municipalities, private sector is needed.

Responsibilities and cost:
The municipalities may further be responsible for the collection of industrial waste. However, general waste management should be organised at a higher governmental level. Therefore it is recommended that NEA would be responsible for the general management and disposal/treatment options for waste. It is furthermore proposed that a waste management team is installed and that capacity building and technical assistance are provided.
Technical assistance is recommended for the development of the master plan. The cost is estimated at 150 000 USD. A yearly cost of 15 000 USD should be foreseen for the operation of the waste management team (1 Master, 4 Bachelors, 2 assistants). The development of the master plan may start during the construction phase.
Further needs for waste collection and disposal for the operation of the TGP.

Although the quantity and composition of the wastes are not known at this stage, a number of needs and recommendations can already be put forward both for collection and for disposal of TGP generated wastes during operation:

- for waste collection during the operational phase, a compacting-loading truck should be put available to the municipality concerned;
- in view of the limited (if any) quantity of hazardous waste expected, it is not advised to foresee in new facilities at this stage; only upon assessment of quantities and composition it may be advisable;
- if a dump site is planned, the following guidelines have to be taken in consideration:
  A sealing layer should be provided at the bottom of the dump site. This layer consists of an impermeable soil layer topped with an artificial layer. Sealing layers are characterised by:
  - impermeable soil layer: at least 3 m in thickness and hydraulic conductivity below $1 \times 10^{-9}$ m/s;
  - artificial layer: equivalent to an HDPE-foil of 2.5 mm in thickness.

Waste is dumped in layers of a maximal height of 2.5 metres. In order to prevent dust and odour nuisance, a covering layer of at least 0.2 metres has to be provided on top of every layer of waste.

If dumping activities are ended, another sealing layer should be provided, build up of an impermeable soil layer covered by an artificial layer. Sealing layers are characterised by the following properties:
  - impermeable soil layer: at least 0.5 m in thickness and hydraulic conductivity below $1 \times 10^{-9}$ m/s;
  - artificial layer: equivalent to an HDPE-foil of 2.5 mm in thickness.

On top of the sealing layer, a finishing layer is provided, consisting of a drainage layer of at least 0.3 m in thickness and build up of materials such as debris and sand. Finally this finishing layer is covered with a soil layer, suitable for plant growth.

Special attention should be taken to site selection. A wide range of physical and ecological constraints has to be considered. Dumpsites may have important effects on landscape and land use and could cause groundwater pollution. It is recommended to use the EIA-procedure at this aim.

- any waste treatment / disposal facility should be the subject of an EIA.

Responsibilities and cost:
The involved municipality could be responsible for waste collection. The cost of a compaction-loading truck is approximately US$150,000. As mentioned above, apart from collection, waste management should be governed by the NEA.

3.1.2.3. Capacity building needs and sensitisation

In the field of waste management, there is a clear need for human resources development. It is recommended to foresee in capacity building in the framework of the TGP, although the needs do not specifically originate within the framework of this project. To that aim training courses should be organised in the Gambia for:
- representatives from NEA (a team of at least 5);
- those responsible for waste collection from the municipalities involved in the TGP;
- representatives from other Departments and other members of the EIA Working Group.

Training should be organised under the form of 2-3 week courses including items such as:
- waste classification; different categories of waste;
- characteristics of different categories of waste;
- waste minimisation methodologies;
- waste separation possibilities;
- waste collection;
- waste treatment techniques;
- waste disposal;
- financing waste management.

The training activities and awareness should be carried out under the responsibility of NEA, in close co-operation however with the other departments. The estimated cost for capacity building is US$100 000.

### 3.2. Monitoring

The objective of a monitoring plan and activities is to obtain reliable information on the quality of ambient air and media. The overall concern in this respect is to identify trends and changes at an early stage to provide input for corrective action if and when required.

The procedure for monitoring is the following: NEA imposes monitoring activities, verifies the quality of the monitoring, receives the reports and provides feedback to the activities; this feedback can be in the form of licence revocation, mandatory mitigation, review of ESMP, additional monitoring, remedying, etc.

### 3.2.1. General monitoring principles

#### 3.2.1.1. Monitoring plan:

- Selection of the parameters of concern
  Based on the assessment of the environmental and social impacts of the TGP, the parameters of concern that are included in the monitoring plan are presented in Table 5. This list is not exhaustive and maybe completed with other parameters that prove to be of concern following subsequent additional EIAs for specific activities.
- Method of collection and handling of samples (specifying the location, the frequency, type and quantity of samples, and sampling equipment)
- Sample analysis or on-line monitoring
- Format for reporting the results

Objective is to collect and analyse representative samples to produce data for use in the environmental management system. The focus of the monitoring plan and activities are the operational phases of the project; construction is not expected to cause any protracted environmental or social impacts that require monitoring. However, it is recommended that NEA monitors construction activities and their impact in a less close manner, e.g. through an evaluation of the number and nature of complaints that are lodged in this regard.
3.2.1.2. Complaints

The NEA should be the focal point for complaints regarding the environmental and social impacts of the TGP. Registering complaints, examining their validity and causes are part of the monitoring process. Informing the general public and authorities involved of the possibility to complain about environmental and social impacts of the TGP and of the procedures to be followed, is part of the public awareness building related to this project. A procedure for registering and follow-up of complaints to the NEA is to be established.

3.2.2. Environmental and Social Monitoring Plan

The monitoring plan is presented in matrix format in Table 4.
### Table 4. Environmental and Social Monitoring Plan

<table>
<thead>
<tr>
<th>Parameter of concern</th>
<th>Method of collection and handling of samples</th>
<th>Sample analysis</th>
<th>Investment (US$)</th>
<th>Recurring costs (Annually, consumables) (US$)</th>
<th>Reference values⁴</th>
<th>Format for reporting the results</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR QUALITY</td>
<td>(Various continuous and discontinuous methods are available; a method for continuous monitoring of ambient air quality is proposed)</td>
<td>Chemo-luminiscence of NO₂; other forms of NO₂ in sample gas stream are oxidised to NO₂ using O₃.</td>
<td>150 000 (mobile lab) 50 000 (fixed air quality monitoring point)</td>
<td>Calibration gasses: 2 000</td>
<td>40 µg/m³ (24 hours)</td>
<td>As concentrations (µg/m³), and percentage of acceptable reference level, completed with data on wind speed and wind direction</td>
</tr>
<tr>
<td>Ambient air</td>
<td>Air quality monitoring point to be set up 0.5-1.0 km north from the industrial estate border; monthly monitoring during 24 hours; alternatively, a mobile air quality control lab (light truck equipped with sampling and monitoring equipment and auxiliary equipment e.g. calibration gasses,...)</td>
<td>UV-fluorescence; SO₂-specific pre-filter recommended to avoid interference.</td>
<td>125 µg/m³ (24 hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO₂</td>
<td>Air quality monitoring point to be set up 0.5-1.0 km north from the industrial estate border; monthly monitoring during 24 hours; alternatively, a mobile air quality control lab (light truck equipped with sampling and monitoring equipment and auxiliary equipment e.g. calibration gasses,...)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SO₂</td>
<td>Air quality monitoring point to be set up 0.5-1.0 km north from the industrial estate border; monthly monitoring during 24 hours; alternatively, a mobile air quality control lab (light truck equipped with sampling and monitoring equipment and auxiliary equipment e.g. calibration gasses,...)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⁴ When no value is specified, this means that the reference values are activity-specific and need to be established when an additional EIA is done.
<table>
<thead>
<tr>
<th>Parameter of concern</th>
<th>Method of collection and handling of samples</th>
<th>Sample analysis</th>
<th>Investment (US$)</th>
<th>Recurring costs (Annually, consumables) (US$)</th>
<th>Reference values⁴</th>
<th>Format for reporting the results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>Air quality monitoring point to be set up 0.5-1.0 km north from the industrial estate border; monthly monitoring during 24 hours; alternatively, a mobile air quality control lab (light truck equipped with sampling and monitoring equipment and auxiliary equipment e.g. calibration gasses,...)</td>
<td>CO-specific diffusional electrochemical sensor; CO-specific pre-filter recommended to avoid interference</td>
<td>10 000</td>
<td>10 000 µg/m³ (WHO)</td>
<td>As concentrations (µg/m³), and percentage of acceptable reference level, completed with data on wind speed and wind direction</td>
<td></td>
</tr>
<tr>
<td>TSP (PM10)</td>
<td>Air quality monitoring point to be set up 0.5-1.0 km north from the industrial estate border; monthly monitoring during 24 hours; alternatively, a mobile air quality control lab (light truck equipped with sampling and monitoring equipment and auxiliary equipment e.g. calibration gasses,...)</td>
<td>Pre-filter for selective removal of dust particles with diameter &gt; 10 µm. Captation of fine dust on micro-filter. Continuous measurement of dust filter with oscillating micro-balance.</td>
<td>50 µg/m³</td>
<td>50 µg/m³</td>
<td>As concentrations (µg/m³), and percentage of acceptable reference level, completed with data on wind speed and wind direction</td>
<td></td>
</tr>
<tr>
<td>Emissions to air</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO₂</td>
<td>NOx-specific diffusional electrochemical sensor</td>
<td>Hand-held monitor (e.g. TestoTerm) with simultaneous detection of 3 pollutants and O₂ and moisture. Conversion to reference conditions on integrated computer or on PC.</td>
<td>15 000</td>
<td>Negligible</td>
<td>40 µg/m³ (24 hours)</td>
<td>As concentrations (µg/m³), and percentage of acceptable reference level, completed with data on wind speed and wind direction</td>
</tr>
<tr>
<td>Parameter of concern</td>
<td>Method of collection and handling of samples</td>
<td>Sample analysis</td>
<td>Investment (US$)</td>
<td>Recurring costs (Annually, consumables) (US$)</td>
<td>Reference values</td>
<td>Format for reporting the results</td>
</tr>
<tr>
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<td>-----------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>SO₂</td>
<td>SO₂-specific diffusional electrochemical sensor</td>
<td>Hand-held monitor (e.g. TestoTerm) with simultaneous detection of 3 pollutants and O₂ and moisture. Conversion to reference conditions on integrated computer or on PC.</td>
<td>125</td>
<td>125 μg/m³ (24 hours)</td>
<td>As concentrations (μg/m³), and percentage of acceptable reference level, completed with data on wind speed and wind direction</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>CO-specific diffusional electrochemical sensor</td>
<td>Hand-held monitor (e.g. TestoTerm) with simultaneous detection of 3 pollutants and O₂ and moisture. Conversion to reference conditions on integrated computer or on PC.</td>
<td>10 000</td>
<td>10 000 μg/m³ (WHO)</td>
<td>As concentrations (μg/m³), and percentage of acceptable reference level, completed with data on wind speed and wind direction</td>
<td></td>
</tr>
<tr>
<td>TSP (PM10)</td>
<td>Isokinetic sampling device.</td>
<td>Gravimetric method.</td>
<td>10 000</td>
<td>Negligible</td>
<td>50 μg/m³</td>
<td>As concentrations (μg/m³), and percentage of acceptable reference level, completed with data on wind speed and wind direction</td>
</tr>
</tbody>
</table>

**WATER RESOURCES**

**Effluents:**

Flow rate | At the outlet of the source, after any waste water treatment installation; Monthly | 1) Open channel : calibrated device (venturi, overflow weir, ...) with known relation water height - flow rate 2) Pipe : ultrasonic; To be installed at every production site. To be used in | 4 000 | | m³/hour |
<table>
<thead>
<tr>
<th>Parameter of concern</th>
<th>Method of collection and handling of samples</th>
<th>Sample analysis</th>
<th>Investment (US$)</th>
<th>Recurring costs (Annually, consumables) (US$)</th>
<th>Reference values</th>
<th>Format for reporting the results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Thermometer</td>
<td>included in pH-meter</td>
<td>Degrees Celsius</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly portable pH-meter</td>
<td>Electrometric method (pH-electrode); calibration at 2 known pH values, preferably chosen at both sides of pH of sample; calibration at pH=7 and pH=9</td>
<td>300</td>
<td>annually new electrode: 50</td>
<td>pH units</td>
<td></td>
</tr>
<tr>
<td>BOD</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Measurement of O2-concentration before and after incubation of the sample for 5 days at 20 °C +/- 1°C, with inhibition of nitrification. O2-concentration: Winkler method or O2-specific electrode. Incubation stove and specific glassware required</td>
<td>5 000</td>
<td>chemicals: 100</td>
<td>mg O₂/l</td>
<td></td>
</tr>
<tr>
<td>Parameter of concern</td>
<td>Method of collection and handling of samples</td>
<td>Sample analysis</td>
<td>Investment (US$)</td>
<td>Recurring costs (Annually, consumables) (US$)</td>
<td>Reference values</td>
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</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>-----------------------------------------------</td>
<td>-----------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>COD</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Potassium dichromate method (destruction with K₂Cr₂O₇ followed by titrimetric or colorimetric detection of excess Cr(VI))</td>
<td>test-kit (e.g. Hach, Merck, Dr. Lange,...) + destruction block + colorimeter. Can be used also for cooling water, boiler feed water,...</td>
<td>test-tubes: 2 000</td>
<td>mg O₂/l</td>
<td>mg O₂/l</td>
</tr>
<tr>
<td>Nitrate⁵</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Colorimetric method</td>
<td>10 000</td>
<td></td>
<td>mg/l</td>
<td>mg/l</td>
</tr>
<tr>
<td>Nitrite</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Colorimetric method</td>
<td></td>
<td></td>
<td>mg/l</td>
<td>mg/l</td>
</tr>
<tr>
<td>Ammonia</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Total ammonium with colorimetric method. Calculation of free NH₃ based on total ammonia, pH and temperature</td>
<td></td>
<td></td>
<td>mg/l</td>
<td>mg/l</td>
</tr>
<tr>
<td>Phosphate</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Colorimetric method</td>
<td></td>
<td></td>
<td>mg/l</td>
<td>mg/l</td>
</tr>
<tr>
<td>Chlorinated hydrocarbons</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly</td>
<td>Gas-chromatographic method after extraction with adapted solvent</td>
<td>Refrigerator with backup : 1000</td>
<td>Sample bottles ; air transport of samples : 500. External analysis cost : 50 - 100 USD per sample</td>
<td>μg/l</td>
<td>μg/l</td>
</tr>
</tbody>
</table>

⁵ Depending on the activity; if this is not likely to produce increased levels of this parameter, no monitoring is required.
<table>
<thead>
<tr>
<th>Parameter of concern</th>
<th>Method of collection and handling of samples</th>
<th>Sample analysis</th>
<th>Investment (US$)</th>
<th>Recurring costs (Annually, consumables) (US$)</th>
<th>Reference values</th>
<th>Format for reporting the results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy metals</td>
<td>At the outlet of the source, after any waste water treatment installation; Monthly Take sample + send cooled and conditioned sample to specialised lab</td>
<td>Atomic Adsorption Spectrometry (AAS) or Inductive Coupled Plasma Spectrometry (ICP)</td>
<td>Sample bottles; air transport of samples: 500. External analysis cost: 50 - 100 USD per sample</td>
<td>Sample bottles; air transport of samples: 500. External analysis cost: 50 - 100 USD per sample</td>
<td>µg/l</td>
<td>µg/l</td>
</tr>
</tbody>
</table>

Groundwater:

A groundwater monitoring network is to be installed in the project area. Observation wells are to be installed in the top of the phreatic aquifer. The number of observation wells depends on the number of potential point-

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6 The definition of potential point sources should take into consideration factors such as preventive actions taken around the source, and the age and size of the source.
<table>
<thead>
<tr>
<th>Parameter of concern</th>
<th>Method of collection and handling of samples</th>
<th>Sample analysis</th>
<th>Investment (US$)</th>
<th>Recurring costs (Annually, consumables) (US$)</th>
<th>Reference values</th>
<th>Format for reporting the results</th>
</tr>
</thead>
<tbody>
<tr>
<td>sources of groundwater pollution in an around the project area. Observation wells should be located as follows: • One well for each potential point source, but not closer than 10 metres from one another • One well per ha, not related to a point source • Some wells should be located upstream of the site to monitor the quality of incoming groundwater and some downstream of the site. Periodicity depending on the nature of the activities.</td>
<td>Electrometric method (pH-electrode; calibration at 2 known pH values, preferably chosen at both sides of pH of sample; preferably in-situ measurement)</td>
<td>see above</td>
<td>see above</td>
<td>5.5 – 8.5</td>
<td>pH units</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>To be measured in all observation wells</td>
<td>Electronic</td>
<td>300</td>
<td>none</td>
<td>1 300</td>
<td>μS/cm</td>
</tr>
</tbody>
</table>

7 Fish processing industries and electronics and assembly activities should be required to carry out a groundwater sampling campaign every 10 years. Companies storing and handling bulk products should monitor groundwater quality every 5 years, activities with a minor pollution risk only when ending. The first groundwater sampling campaign should be carried out before starting the activities, in order to get data on the initial groundwater quality.
<table>
<thead>
<tr>
<th>Parameter of concern</th>
<th>Method of collection and handling of samples</th>
<th>Sample analysis</th>
<th>Investment (US$)</th>
<th>Recurring costs (Annually, consumables) (US$)</th>
<th>Reference values</th>
<th>Format for reporting the results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salinity (chloride)</td>
<td>To be measured in all observation wells</td>
<td>Conductivity meter</td>
<td></td>
<td>Conservative value: 25</td>
<td>25 mg Cl/l</td>
<td>mg Cl/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>same as COD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy metals: Pb, Zn, Cd, Cu, Ni, As, Hg, Cr</td>
<td>To be measured in all observation wells</td>
<td>Atomic Adsorption Spectrometry (AAS) or Inductive Coupled Plasma Spectrometry (ICP)</td>
<td>same as COD</td>
<td>see above</td>
<td>8 µg/l</td>
<td>µg/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mineral oil</td>
<td>To be measured in all observation wells</td>
<td>Solvent extraction + IR-detection</td>
<td>same as COD</td>
<td></td>
<td>mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monocyclic aromatic hydrocarbons: benzene, toluene, ethylbenzene, xylene</td>
<td>To be measured in all observation wells</td>
<td>Gas-chromatographic method after extraction with adapted solvent</td>
<td>same as COD</td>
<td></td>
<td>µg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatile chlorinated hydrocarbons</td>
<td>To be measured in all observation wells</td>
<td>Gas-chromatographic method coupled to purge and trap system</td>
<td>same as COD</td>
<td></td>
<td>µg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific components related to point sources; as determined at the time of implementation</td>
<td>Only to be measured in wells in the vicinity of the source</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground water level</td>
<td>To be measured in all observation wells</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAUNA AND FLORA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Habitat quality and pollution in the Ramsar site</td>
<td>DPWM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spin-off agriculture activities development in the zone between the airport and the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8 as per the Gambia water quality standards for groundwater
<table>
<thead>
<tr>
<th>Parameter of concern</th>
<th>Method of collection and handling of samples</th>
<th>Sample analysis</th>
<th>Investment (US$)</th>
<th>Recurring costs (Annually, consumables) (US$)</th>
<th>Reference values</th>
<th>Format for reporting the results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandinari area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCIAL EFFECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formation of squatter settlements</td>
<td>Survey of population</td>
<td>Rapid Assessment</td>
<td>N/A</td>
<td></td>
<td></td>
<td>Narrative description; number of people involved; description of social, economic and family situation</td>
</tr>
<tr>
<td>Related social problems (STDs, crime, etc)</td>
<td>Survey of nearby dispensaries and primary health care facilities; survey of crime figures in the areas concerned</td>
<td>Deviation of tendencies in similar settings</td>
<td></td>
<td></td>
<td></td>
<td>Trends in STD cases/crime numbers</td>
</tr>
<tr>
<td>TOURISM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eco-tourism, specifically the number of tourists / bird-watchers for the FZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHERS, as determined by additional EIAs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2.3. Quality Assurance and Quality Control

Quality control and assurance are of critical importance in the monitoring of the environmental and social impacts of the TGP. To this end, NEA will ensure that the required levels of quality are maintained by those carrying out the monitoring.

The quality assurance is mostly related to the design and selection of sampling and measurement networks, the selection of the sampling sites, instruments and sampling systems. This includes training of the operators and all other elements of the monitoring system that can introduce systematic errors or bias. The quality control focuses on the use and operation of the monitoring system: preparation of protocols for site operation and equipment maintenance, protocols for equipment calibration, preparation of site visit schedules, and protocols for data inspection, review, validation and usage. Quality assessment includes developing a schedule for audits and reports.

The allocation of tasks for the supervision of the implementation of monitoring plan should be done based on the intrinsic capacities and objectives of all agencies possibly involved. As for the overall categories of parameters and their frequency of supervision, Table 5 provides a breakdown according to the agencies involved.

Table 5. Supervision of the implementation of the monitoring plan

<table>
<thead>
<tr>
<th>Agency</th>
<th>Parameter</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEA / DWR</td>
<td>Air quality</td>
<td>6 monthly</td>
</tr>
<tr>
<td>NEA / DWR</td>
<td>Water effluents</td>
<td>6 monthly</td>
</tr>
<tr>
<td>NEA / DWR</td>
<td>Groundwater</td>
<td>6 monthly</td>
</tr>
<tr>
<td>DPWM</td>
<td>Fauna and flora</td>
<td>6 monthly</td>
</tr>
<tr>
<td>Department of Public Welfare</td>
<td>Social effects</td>
<td>6 monthly</td>
</tr>
<tr>
<td>Department of Tourism</td>
<td>Tourism</td>
<td>Annually</td>
</tr>
<tr>
<td>Others, to be specified</td>
<td>Other, as determined by additional EIAs for specific activities</td>
<td>As determined</td>
</tr>
</tbody>
</table>

3.3. Capacity development and training

3.3.1. Situation analysis of the institutional arrangements and resources for environmental management and legal framework

The institutional arrangements and legal framework for the environmental aspects of the TGP are described here. An important element in the environmental sector is the Gambia Environmental Action Plan Phase II (GEAP II).

Ramsar Convention on Wetlands (1971)
The Convention on Wetlands came into force for Gambia on 16.01.1997. Gambia presently has one site designated as a Wetland of International Importance, with a surface area of 20 000 hectares: *Baobolon Wetland Reserve* (North Bank Division). The country has recently added two sites for designation:
- *Niumi National Park* (North Bank Division – 4 940 hectares)
Tanbi Wetland Complex (near Banjul, Western Division - 6 000 hectares)
The procedure for formal inclusion in the list is ongoing.
The National Environmental Management Act (NEMA, 1994) is the legal framework for the control and management of the environment and for matters connected therewith.

The leading authority, the National Environment Agency (NEA), was created in 1993 to co-ordinate the implementation of the Gambia Environmental Action Plan (GEAP I) which was adopted in 1992. Following the approval and implementation of this action plan, the “State of the Environment Report” was the first comprehensive report on the environment in The Gambia. NEA co-ordinated the efforts of contributors from all the concerned government agencies, and published the report in 1997.

Coastal and Marine Environment Working Group. The Executive Director of the Agency is empowered by NEMA under section 16, to establish a technical working group where a matter requires specialised technical consideration. The working group would advise the Agency and carry out its duties according to the terms of reference laid down at its formation. The current coastal erosion rate of 1-4 metres annually is a major environmental problem, which has therefore warranted the creation of a multi-sectoral working group due to the complexity of the problem.

Gambia Ports Authority
The jurisdiction of the authority is regulated by the Ports Act which provides for the establishment of the authority and for the transfer to the said authority of certain port and harbour undertakings of the government. For the coastal zone in question, the jurisdiction of the authority includes the Port of Banjul including the shores and beaches adjoining thereto. The Gambia Ports Authority is also the implementing agency of several international conventions to which The Gambia is a signatory, the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, signed earlier in London in 1973. The Convention’s main objectives are to preserve the marine environment by achieving the complete elimination of international pollution by oil and other harmful substances and the minimisation of accidental discharge of such substances.

The Gambia has also adopted the Convention for Co-operation in the Protection of the Marine and Coastal Environment of the West and Central African region which aims to treat the major problem of regional coastal erosion. Chapter 10 of the “State of the Environment Report – The Gambia” gives a comprehensive overview of this and all other international conventions The Gambia has adopted.

Geological Unit
The unit is the government institution mandated to regulate the right to search for mine and work other minerals and for other purposes relating thereto in accordance with the Minerals Act 1994. All mining of sand, laterite, gravel and salt falls under the jurisdiction of the Minerals Act which is administered by the Geological Unit, Ministry of Trade Industry and Employment. The main issue relating to this Unit is monitoring of the beaches along the Atlantic Coast to prevent illegal mining. Geological Units is responsible for licensing, site selection, monitoring of all mining and quarrying activities in the Gambia. This includes offshore dredging of sand etc. within the Gambia EEZ.
Department of Fisheries

The Department administers the Fisheries Act which is to provide for the management of fisheries and development of the fishing industry in The Gambia. The provision of infrastructure facilities for the fishing industry is a requirement under Section 8(d) of the Act. Improper siting of such facilities can, however, enhance the coastal erosion in certain areas. Under Section 3, Establishment Design and Facilities of the Fisheries Regulations Act, 1995, fisheries establishments should be located in areas which are “free from objectionable odours, smoke, bushes, swamps, dust or other contaminants and are not subject to flooding”. The artisanal fisheries play a major role in beach pollution as most of the fish processing is done directly on the beach.

Department of Parks and Wildlife Management (DPWM)

The conservation and national management of wildlife in The Gambia is administered under the Wildlife Conservation Act (1977) by the Department of Parks and Wildlife Management. Under Section 58 of this Act, the Minister may make regulations for the efficient control and management of any natural park, national reserve or local sanctuary, preparing regulations for all or any of the following:
- prohibition or control on cutting, clearing, burning or otherwise damaging or removing any tree, bush, plant or other vegetation or any part thereof from any national park, national reserve, or local sanctuary;
- prohibition of human settlements and certain human activities disruptive of wildlife and the natural environment in any national park, national reserve or local sanctuary.
Moreover, environmental education with regard to wildlife was initiated by the DPWM in 1997 with the construction of an Environmental Education Centre at the Abuko Nature Reserve. Training is conducted throughout the country.

Area Councils

The Local Government Act is an act to amend, consolidate and make provisions for local government in The Gambia other than in Banjul. In addition to any functions imposed upon the council by this act or any other law for the time being in force, a council may perform several functions in respect of the area for which it is established under section 27(1):
- prevention of soil erosion;
- prohibition, restriction and control of the cutting and selling of trees and forest products and the management of such forest parks and areas as may be delegated and the planting and tending of trees in general;
- the regulation of the disposal of refuse, the prevention and abatement of nuisances and generally for the oversight of health and sanitation;
- the establishment and management of recreation grounds open spaces and parks.

The Banjul City Council which has the functions similar to the other area councils, is empowered under section 32 to prevent or regulate a number of environmental issues, especially the establishment and management of parks, and other places of public resort or recreation for the use of the public and by section 52(2)(d) of the Local Government (City of Banjul) Act to make bylaws for a number of purposes including the prevention of damage to the land.
Land Tenure in The Gambia

Two types of land tenure do exist in The Gambia. These two types or systems are the Formal, that is leasehold and freehold and the other one is the Non-Formal; that is the Customary tenure. Within the Formal System, the freehold tenure is the same as total ownership. Both private and public freeholds do exist in The Gambia since independence none has been made, due to the fact that it was widely believed to be a mistake, since it can create numerous problems to the Government such as preventing government from being able to influence the future ownership or occupation of land. The other system (Leasehold) on the other hand does not grant total ownership. It is the result of a contract granting exclosure right to possession of land for a fixed period shorter than the grantors interest. The grantor can be either private or public agency.

With regard to Non-Formal (Customary tenure) in the coastal area, the ownership and occupation of land was still based on the customary practices of the local people, until 1991, when the Government of The Gambia signed into law four new land acts: the State lands act, 1990, the Physical Planning and Development Control Act, 1990, Surveys act 1990, Land and Compensation Act, 1990. Within this area, before the new land act was signed, most land was generally owned by the village. The village headman or Alkalo was responsible for allocating such land to compound heads, who makes decisions about the cultivation or reallocate to the member of their extended families.

Land Administration

The principal agency, responsible for land administration in The Gambia is the Ministry for Local Government and lands within which, two departments are directly concerned with land matters.

The Department of Physical Planning and Housing is responsible, among other duties, for long term planning, design of lay-outs or subdivisions and the issuing of development permits for all new developments as well as for changes in land use. It is also responsible for the establishment of housing policy, research into technical aspects of housing as the administration of building codes and rent control.

The Department of lands and surveys on the other hand has four basic functions. It is the sole government agency responsible for national mapping. In addition to its responsibilities, it is also responsible for all Cadastral Survey activities, which include the demarcation of new lay-outs and individual parcels for which lease hold titles are to be granted by the State. Some of its responsibilities also includes the creation, recording and control of rights and interests in land as well as the valuation of properties for taxation purposes.

Apart from the Ministry for Local Government and Lands, the Justice Ministry also plays a vital role in land administration. It runs the deed registry which records all transactions involving land matters, also assisting with any legal matters.

Local Institutions such as the Area Councils (Municipalities) Divisional Commissioners, Seyfolu (District Chiefs) and Alkalolu (Village heads) are traditional in nature and hence fall under the jurisdiction of Customary law. Their role in land administration is therefore restricted to land under Customary tenure.

Due to the centralised nature of government, the role of the Municipalities with respect to land administration is limited to a small amount of development activity involving public services as well as the collection of rates. They are also responsible, in the case of land held under Customary tenure into a State leasehold.
Regulatory requirements.
Requirements for additional national regulation are specified in the EIA (Ecolas, 2000) for each environmental parameter.

3.3.2. National Environment Agency

The NEA is part of a functional institutional framework. It is working at a larger, national scale, which is larger than what is required for the TGP ESMP, and takes into consideration more and different requirements.

The environmental strengthening in the Gambia is function of the overall development of environmental management capacity as envisaged in GEAP II. In this respect, and at this stage, development and institutional arrangements are dependent on the overall developments in the sector. The following base principles guide the institutional arrangements and overall capacity building:
1. The central role of the NEA as the regulatory, enforcement and monitoring agency, supervising and steering developments
2. The role of the private sector to develop its capacity to take up part of the activities in the environmental sector following the creation of relevant demand
3. The institutional arrangements and developments need to be in line with those envisaged in GEAP II.

It is beyond the scope of this study to propose detailed institutional arrangements for the implementation of the TGP ESMP. If this were done, and given the process-nature of the developments in the environmental sector, there would be a risk of producing conflicting development scenarios, which might result in a slowing down of the effective implementation of the ESMP. Therefore, it is considered essential in the development of institutional arrangements for the implementation of the ESMP that this is done in a manner integrated with other major developments in the sector, be it ongoing or planned. This is particularly relevant for the NEA, which is central in the co-ordination at national level of the activities and environmental consequences of the development of the TGP. The position and mandate of NEA is to be reinforced under GEAP II to give it stronger enforcement power so that it can regulate the management of the environment in general, and of the TGP in particular, in a more effective manner.

Ineffective donor co-ordination has been one of the main constraints to development of capacity in the environment sector in the Gambia and was quoted as one of the major difficulties in the implementation of GEAP I. Facilitating donor co-ordination for environment-related activities is a role for the NEA.

Despite these restrictions, the overall direction in which the institutional arrangements need to develop for an effective implementation of the ESMP are clear: the NEA is to play a central role as the co-ordinating and regulating unit. NEA needs to be assigned additional resources (financial, personnel) to effectively supervise and guide the implementation of the ESMP. The NEA is to become the national resource centre for know-how and expertise on environmental impact assessment and management.

For the implementation of this ESMP, new roles are identified for the NEA:
1. Guide the implementation of the ESMP in all aspects
2. Provide guidance regarding the selection of the TGP site
3. Review the environmental impacts of proposed activities and developments at the TGP site for coverage by the ESMP. Attention in this should be focused on the effective assignment of responsibilities for the implementation of the mitigation and monitoring measures, on the quality and effectiveness of mitigation and monitoring during implementation, and on reaching public consensus on the impacts and management.
4. Monitor the effective implementation of the mitigation and monitoring activities, and provide feedback and – when required – guidance toward this goal to the operator(s)
5. Stimulate the private sector in developing skills and in investing in its capacity to carry out activities in environmental management.

This results in the following capacity requirements for the NEA:
1. Capacity to review proposed activities for the TGP for environmental impacts
2. Capacity to assess the effectiveness of proposed mitigation of negative environmental impacts
3. Capacity to assess the effectiveness of the mitigation and monitoring measures as specified in the ESMP for the proposed activity
4. Capacity to identify all impacts of the proposed activities in the framework of the TGP on environmental matters.
5. Capacity to liaise effectively with other Departments of State, Departments, Institutes and all other agencies with specific expertise and/or capabilities to assess impacts that are not in the competence of the NEA
6. Capacity to co-ordinate with such partner agencies to evaluate all aspects of the impacts of the proposed activities and to identify and agree on required mitigation and/or monitoring
7. Capacity to assess with the other agencies the extent to which negative impacts are sufficiently and effectively dealt with under the provisions of the present ESMP
8. Capacity to hold effective public consultations at the time of scoping, including all people or groups affected by the proposed activity
9. Capacity to conclude if an additional EIA is required for a proposed activity
10. Capacity to prepare Terms of Reference (TOR) for the additional EIA and to select a team with capability to effectively carry out the additional EIA in agreement with the developer
11. Capacity to provide guidance and feedback to the developer and the EIA team during the implementation of the additional EIA
12. Capacity to review the additional EIA and resulting ESMP in terms of compliance with environmental and social safeguarding requirements
13. Capacity to conduct public consultations on the additional EIA and the proposed measures of the additional ESMP
14. Capacity to assess and assist with the incorporation of the additional environmental and social management measures in the overall TGP ESMP
15. Capacity to carry out quality control of the environmental monitoring
16. Capacity to interpret monitoring results and to take effective action accordingly.

The development of additional capacity and operational procedures for the implementation of the ESMP should be incorporated in the developments that are ongoing in the Gambia in the field of environmental protection and related capacity building and regulation.
3.3.3. Technical capacity

3.3.3.1. Environmental Management and Monitoring Capacity of the private sector

As part of the assessment of the capacity presently available in the Gambia, the local private sector was analysed for its capacity of environmental assessment, monitoring and management. In recent years, two EIAs were made by the Gambian private sector. The private sector could play a role in the implementation of the EMP of the TGP.

At present, three private companies are active in the field of environment related matters:
- Sfynx Associates
- Cityscape Associates
- Gambia Architectural and Planning Consultants (GAP)

None of these companies has much experience with environmental assessment: Sfynx Associates is reported not to have made EIAs, and the other two companies have carried out one EIA each.

The activities and capacity of two\(^9\) of the three companies are briefly described here:

- **Cityscape Associates**
  This company’s primary fields of activities are land engineering and surveying, and urban and regional planning.

  The permanent staff of eight professionals includes a chartered surveyor, an architect, a structural engineer, a civil engineer, a hydrogeologist and an environment specialist. For projects, a not specified number of loose associates are available.

  Cityscape has the equipment and capacity to drill boreholes and collect soil samples. It is planning to extend its capacity in this with a rig allowing drilling of boreholes of up to 20 m deep. It does not do soil analysis. This is subcontracted to the Department of Technical Services (Department of State for Works). There are plans to develop GIS-capacity in the near future.

  Cityscape was contracted for one EIA. Most of the associates that were deployed for this assignment are government officials of the respective specialised entities.

  Conclusion: Cityscape has a limited capacity in the field of environmental assessment, monitoring and management, and more particularly in the land use and soil sampling specialties.

- **Gambia Architectural and Planning Consultants (GAP)**
  GAP’s main expertise lies in planning and land use. It draws upon government staff on a freelance basis for project requiring specific expertise.

  GAP has done the EIA for a private shrimp farming initiative, which was required by the NEA.

  Conclusion: GAP does have some capacity in the fields of planning and land use but lacks overall environmental assessment, monitoring and management capacity. It has no technical resources

\(^9\) Specific information was requested from *Sfynx Associates* but not received at the time of reporting.
for data collection or analysis in this field. There are no immediate plans for development in this
direction due to the small demand.

**Overall conclusion.**
There is little relevant capacity for environmental assessment, monitoring and management in the
private sector in the Gambia. The capacity and expertise available is focused on land use
planning, (soil) engineering, surveying, mapping and planning. When environmental activities are
undertaken, this is usually done by hiring specialist government officials. None of the companies
interviewed currently has plans for investment or other initiatives to expand their environmental
capacity; such development needs to be demand driven and for this the market is said to be to
small in the Gambia.

One of the objectives of the proposed ESMP is to create a demand for EIA and environmental and
social management plans that will allow this part of the private sector to develop. Environmental
and social safeguarding is not expected to slow down investment and economic development; on
the contrary, it can be a strong marketing argument.

It is unlikely that the demand for environmental analysis and management will grow in the
foreseeable future to an extent that private sector investment will cover all elements of the
environmental and social management activities. In this case, the government has a crucial role to
play by providing services that cannot be supplied by the local private sector.

### 3.3.3.2. Government capacity

Agencies that are currently involved in activities that could be part of an ESMP are:

1. **Department of Water Resources (DWR).**
The major responsibilities of the DWR are in the provision of drinking water and water for other
purposes (agriculture, industries, etc.). The DWR is also responsible for ambient air and water
quality. Three divisions of the department are involved in activities that are relevant for the
ESMP. The Water Quality Division monitors routinely drinking water sources and carries out
specific Environmental Quality Monitoring activities. The Hydrology Division includes in its
activities ground and surface water monitoring, salinity and discharge measurements. The
Meteorology Division collects data on the climate and is involved in air quality monitoring.
Currently, ten sites are monitored, mostly for motorised transport related pollution. The
department has a history of air quality monitoring (NO, Pb and PM10) but the drying up of
external funding is affecting these programmes and capabilities. Staff resources are available
(chemical engineer) but there is a problem of seconded staff that is not replaced during
secondment. There is one APSO volunteer chemical engineer present at the DWR. In the water
component, a senior scientist post is vacant. Water quality is monitored of saline, surface and
ground water. This monitoring capacity includes standard physico-chemical parameters, a
number of dissolved ions and a number of bacteriological parameters. The department is
monitoring water quality at a number of beaches and swimming pools. It has the mandate to
control water quality testing and monitoring by the private sector. The DWR is the agency in the
Gambia that has the most resources and capacity at this time for environment-related technical
matters. There is a need for training at M.Sc. level, as well as in-country specific short training
courses. The Meteorology division requires a M.Sc./M. Eng. level person for chemical parameters
analysis.
2. Department of Livestock Services
This department has a water quality laboratory (Abuko) for agriculture purposes.

3. Department of Technical Services in the Department of State for Works
This department has the basic capacity for soil sampling and analysis for engineering purposes.

4. Department of Physical Planning
The Department of Physical Planning could play an important role in the implementation of the ESMP, especially when mitigation measures related to planning and land use such as zoning and location of specific activities are involved. The capacity that is available at the department, however, is insufficient both in terms of equipment and trained personnel. Overall, there is a need for 4 additional professionals with B.Sc. level training in planning. One person is currently receiving formal training in GIS, albeit that the capacity at the department in terms of GIS is not existent. There is a desire and need to develop a GIS component at the department. Basic drawing equipment is lacking and funding is required.

5. Fisheries Department
The Fisheries Department has a more indirect role in the implementation of the ESMP. There is clear understanding present at the department about the ecological importance of mangrove and coastal areas for sea fisheries. The department regulates and controls the marine fisheries and its statistics unit records and analyses data on both industrial and artisanal marine fisheries. As such, and albeit mostly indirectly, the Department of Fisheries has an important role in monitoring the long-term impacts of the TGP on mangrove and other important marine habitats. It is unclear where the final authority over mangrove areas lies (Forestry Department?).

6. Department of Parks and Wildlife Management (DPWM)
The DPWM has six technical officers, and the department’s training needs have been identified in the strategic plan. M. Sc. level management staff and scientists are lacking; the only constraint to training is funding. Six people have been identified holding the highest national degrees; all have been accepted a universities abroad for one-year M. Sc. training. Overall training needs for the coming five year are that of 8 people at M.Sc. level; posts and funding to absorb them after training exist.

7. Gambia Investment Promotion and Free Zones Agency (GIPFZA)
The GIPFZA has been recently established as the agency in charge of the TGP. It lacks currently capacity to co-ordinate the implementation of the ESMP. There will be need for capacity building in environmental management and EIA/ESMP techniques for a staff member to act as focal point for environmental matters, both within GIPFZA as towards the outside, notably NEA.

Overall, it can be concluded that there are still major capacity gaps in the Gambia for the implementation of the ESMP. The private sector capacity is limited to those areas where a viable market exists; further development of capacity here will require the creation of a sustained demand, which at this stage not be guaranteed. The capacity with government institutions is far better developed, especially in the DWR and DPWM, but lacks specific expertise and equipment required for the implementation of the ESMP.
3.3.4. Requirements for the implementation of the ESMP

3.3.4.1. Capacity strengthening

- It is recommended that the NEA and GIPFZA sign a Memorandum of Understanding prior to final project negotiations to clarify their relationship in respect to the implementation of the TGP. This MOU should specify the general and specific arrangements regarding procedures, time frames and mutual requirements. In particular, it will frame the supervisory and control function of NEA regarding the ESMP while the implementation of the ESMP lies with GIPFZA who will also have a role in this towards investors in the FZ. The MOU will concretise the expressed willingness and capacity of both parties to co-operate.

- It is recommended that the NEA signs a Memorandum of Understanding with the Department of Water Resources as main partner for the technical implementation of the ESMP.

- It is recommended that the TGP provides the necessary means to the DWR to build the technical capacity to fully implement the monitoring and control activities as required under the ESMP; at this stage it is not possible to provide a full and complete overview of the precise capacity requirements since this depends in part on the nature and size of the activities that will be developed in the TGP site.

- A training needs assessment will be done for the TGP; the needs identified for the implementation of the ESMP should be included.

- In order for the ESMP to be implemented, the following staff requirements need to be met:
  - air and water quality monitoring: 1 chemist (M.Sc. level), 1 lab assistant (analysis, sampling) (B.Sc. level), 2 lab assistants (sampling) (high school level). The indicated location for these staff to be deployed is the DWR
  - for effective enforcement and control of the ESMP, the capacity at NEA should be brought at the following level: 2 inspectors (M.Sc. level), 4 inspectors (B.Sc. level) and 2 assistants (high school level)

- In order for the ESMP to be implemented, the following training requirements need to be met:
  - air and water quality sampling procedures (in-country)
  - air and water quality samples analysis (abroad)
  - EIA techniques training for all those involved in the EIA process (in-country and abroad)

3.3.4.2. Required technical and financial assistance

Technical assistance is required in the fields of
- capacity building at NEA in the field of the application of the EIA process;
- capacity building in the private sector involved or intending to get involved in EIA activities;
- capacity building at GIPFZA in the field of EIA process and ESMP implementation

These requirements can be covered by the proposed WB funded training (TOR are taken up as Annex 6).

- capacity building of scientists at M.Sc. level at the NEA (2 fellowships) and at DWR (2 fellowships)
- training of technical staff at monitoring procedures and techniques (sampling, sample preservation, sample analysis, reporting)
- Capacity building at NEA and members of the EIA Working Group in conflict prevention and resolution techniques

Financial assistance is required as specified in the financial plan for the ESMP.
4. IMPLEMENTATION SCHEDULE AND COST ESTIMATES

4.1. ESMP Implementation schedule

The timing of the implementation of the different elements of the ESMP (mitigation, monitoring, and follow-up) has been indicated in the relevant tables. Here, an overview is presented of the phases of the TGP and the subjects that are to be taken into consideration. Activities for which an additional EIA is required are not taken up since monitoring and mitigation requirements are yet to be determined.

Table 6. Implementation schedule

<table>
<thead>
<tr>
<th>Environmental parameter</th>
<th>Mitigation</th>
<th>Monitoring</th>
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<tbody>
<tr>
<td></td>
<td>Construction</td>
<td>Operational Phase 1</td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td></td>
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<tr>
<td>Groundwater</td>
<td></td>
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<tr>
<td>Surface water</td>
<td></td>
<td></td>
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<tr>
<td>Soils</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flora</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fauna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine and Coastal Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Archaeological, historic and cultural values(^{10})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social effects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human health</td>
<td></td>
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</tbody>
</table>

In order to enable NEA to perform its role as supervisory agency guarding compliance with the ESMP and national and international standards, regular reporting is required by the GIPFZA, responsible for implementing the ESMP. To this effect, it is recommended that on a monthly base, GIPFZA reports to NEA on a series of ongoing technical matters such as monitoring results, the progress of additional EIAs, any incidents, etc. In addition, quarterly reports to NEA on trends in investments, pipe-line projects and evolutions in the environmental and social management of the project are required to permit NEA to anticipate and react in a timely manner to new developments related to the TGP. Every year, GIPFZA submits an annual environmental report to NEA in which a detailed overview is given of activities, environmental impacts, activities undertaken under the implementation of the ESMP, trends emanating from the monitoring activities, and a conclusion on the cumulative impact of the TGP on the natural and social environment.

This reporting arrangement should be included in the MOU between the NEA and GIPFZA. A formal forum and line of communication between NEA and GIPFZA for the implementation of the ESMP.

\(^{10}\) No mitigation as such is required at this point; however, attention should be paid during construction activities for the uncovering of potentially interesting or important sites.
TGP should be foreseen at the appropriate levels of each agency. A working group including NEA and GIPFZA and the main other stakeholders in the EIA process and in the implementation of the ESMP (Department of Public Welfare, Department of Water Resources, etc) could be a formal structure for this. It is recommended that negotiations regarding the practical arrangements between NEA and GIPFZA for the implementation of the ESMP commence as soon as possible.

4.2. Financial plan for the ESMP

Table 7 presents an estimation of the total cost involved for the implementation of the ESMP. Only costs that are not covered by the investors or developer are taken into consideration here. The estimation is to be considered a minimal one as it is based on the assumptions about what is currently known about the nature and volume of activities that will be developed. The actual cost is likely to be higher although this will entirely depend on the nature of the proposed activities.

Table 7. Cost estimation for the implementation of the TGP ESMP.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Estimated cost (US$)</th>
<th>Estimated total cost (US$)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIA process training</td>
<td>27 000</td>
<td>27 000</td>
<td></td>
</tr>
<tr>
<td>Technical training for monitoring</td>
<td>30 000</td>
<td>120 000</td>
<td></td>
</tr>
<tr>
<td>and mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring programme</td>
<td>196 000</td>
<td>196 000</td>
<td>Option of mobile lab; option of a fixed air quality monitoring lab reduces the cost by approx. 100 000</td>
</tr>
<tr>
<td>Recurrent operating costs</td>
<td>13 560 – 21 060</td>
<td>67 800 – 105 300</td>
<td>Range based on number of samples (50 – 100) analysed; total cost for five years of operation</td>
</tr>
<tr>
<td>Known mitigation</td>
<td>60 000</td>
<td>60 000</td>
<td></td>
</tr>
<tr>
<td>Waste management plan</td>
<td>450 000</td>
<td>450 000</td>
<td></td>
</tr>
<tr>
<td>recurring operating costs</td>
<td>15 000</td>
<td>75 000</td>
<td></td>
</tr>
</tbody>
</table>
5. **Integration of the ESMP with the Project**

The ESMP was conceived on the basis of a close interaction between the promoting agency GIPFZA and the environment agency NEA at all stages of the project.

All stages of the implementation of the TGP need to build on consensus between the GIPFZA and the NEA. The safeguarding of the natural and social environment should be kept in mind at all stages of development of the TGP. As mentioned higher, the implementation of the ESMP must not become a burden for genuine environmentally and socially sound projects or activities. The NEA is to guide the GIPFZA and individual developers with the environmental and social safeguarding in connection to the project and related activities; the position of the NEA should be one of service provided to the developers.

The NEA should work out together with DOSTIE/GIPFZA operational procedures and guidelines for the implementation of the ESMP. These should be rigid as towards the quality requirements for the environmental and social assessment and management process but flexible and service-oriented for the timing. In this way, the environmental and social safeguarding should not significantly delay the implementation of development or investment activities. It is recommended that a specific agreement be worked out, limiting the time for initial review of proposed activities and investments at the TGP site by NEA to no more than three weeks; this delay is considered crucial in order to maintain the competitiveness of the Gambian TGP.

A similar arrangement is recommended to be concluded between the National Council for Arts and Culture and GIPFZA with respect to possible archaeological findings. A procedure should be established in case of findings at a site (work stopped, period for National Council for Arts and Culture to examine the site, etc.)

It is recommended that in all agencies and parties involved a focal point is designated for the implementation of the ESMP. For GIPFZA as the main implementing agency, this does not have to be a full time environmental specialist. Guidance and technical advice regarding the implementation of the ESMP will be provided by NEA, and the execution of technical works such as monitoring, environmental impacts assessment is expected to be carried out by external private consultants. It is recommended that this person for GIPFZA be sufficiently senior to have an influence within the organisation but now too senior to remain sufficiently approachable.

The cost for the implementation of the ESMP is to be borne by the developer, being DOSTIE/GIPFZA or the private investor. NEA and all other agencies involved providing services are to charge reasonable costs for their services in reviewing or otherwise participating in the implementation of the ESMP.
### 6. List of Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>TGP</td>
<td>Trade gateway Project</td>
</tr>
<tr>
<td>NEA</td>
<td>National Environment Agency</td>
</tr>
<tr>
<td>GEAP</td>
<td>Gambia Environmental Action Plan</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
</tr>
<tr>
<td>SO\textsubscript{2}</td>
<td>Sulphur dioxide</td>
</tr>
<tr>
<td>NO\textsubscript{x}</td>
<td>Nitrous oxides</td>
</tr>
<tr>
<td>TSP</td>
<td>Total suspended particles</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon monoxide</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>IDA</td>
<td>International Development Association</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Carbons</td>
</tr>
<tr>
<td>TOR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental Organisation</td>
</tr>
<tr>
<td>STD</td>
<td>Sexually Transmittable Disease</td>
</tr>
<tr>
<td>DPWM</td>
<td>Department of Parks and Wildlife Management</td>
</tr>
<tr>
<td>DWR</td>
<td>Department of Water Resources</td>
</tr>
<tr>
<td>B. Sc.</td>
<td>Bachelor of Science</td>
</tr>
<tr>
<td>M. Eng.</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>M. Sc.</td>
<td>Master of Science</td>
</tr>
<tr>
<td>GCAA</td>
<td></td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>GDA</td>
<td>Gambia Divestiture Agency</td>
</tr>
<tr>
<td>CED</td>
<td>Customs and Excise Department</td>
</tr>
<tr>
<td>QMS</td>
<td>Quality Management Systems</td>
</tr>
<tr>
<td>GOG</td>
<td>Government of The Gambia</td>
</tr>
<tr>
<td>PCU</td>
<td>Project supervision and co-ordination unit</td>
</tr>
<tr>
<td>FZ</td>
<td>Free Zone</td>
</tr>
</tbody>
</table>
REFERENCES


www.ramsar.org
7. **ANNEX 1:**

**TERMS OF REFERENCE**


A Belgian Consultancy firm, ECOLAS, was contracted in June 2000 by the Government of The Gambia, with the assistance of World Bank, to carry out the environmental impact study of The Gambia Trade Gateway Project, according to a set terms of reference and present to the Government of The Gambia its conclusions in the form of an environmental impact statement.

The consultant ECOLAS is requested to carry out work on an ESMP as follows:

1. A situation analysis of the institutional arrangements and resources (including financial, technical and human) for environmental management, particularly monitoring, auditing, mitigation and their enforcement in The Gambia, highlighting the strengths and weakness.
2. Recommend appropriate measures and actions, and where necessary alternative or new ones, for effectively carrying out the mitigatory measures recommended in the EMP. Specifically, this will include strengthening local capabilities of the institutions identified in 1 above and the corresponding technical and financial assistance needed.
3. A Financial plan clearly costing the activities of the EMP that are to be executed during the life of the project.
4. A matrix of the potential environmental and social impacts of the project on each site (Bund Road and the Airport), with their corresponding mitigation measures and institutional arrangements for carrying out the required work, the associated costs and time frame for implementation. This will include an update of the EMP with the latest project information.
5. For the purposes of cross-referencing, confirmation and consensus building, the consultants will facilitate a consultative workshop in Banjul to present their findings on 1-4 above to the EIA working group and other interested parties prior to writing their final report. The workshop will serve as a forum for a collective definition of and consensus on the objectives, strengths and weaknesses of any proposed institutional arrangement.
6. This additional work, starting on 1 April 2001, is scheduled to be carried out over a period of 75 days. A draft report is expected to be presented at a consultative workshop 45 days after the commencement of the study. The final report will be submitted 30 days after the workshop.
8. **ANNEX 2:**

**CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE ESPECIALLY AS WATERFOWL HABITAT**

Ramsar, Iran, 2.2.1971

as amended by the Protocol of 3.12.1982
and the Amendments of 28.5.1987

**Article 3**

1. The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory.

2. Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the organisation or government responsible for the continuing bureau duties specified in Article 8.
9. **Annex 3:**

**Resolutions of the San José Conference. Resolution VII.16 on Impact Assessment**

The Ramsar Convention and impact assessment: strategic, environmental and social

1. **RECALLING** Article 3.2 of the Convention which states that each Contracting Party "shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List [of Wetlands of International Importance] has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference", and also Article 3.1 which states that Contracting Parties "shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory";

2. **FURTHER RECALLING** Recommendation 6.2 which "calls on the Contracting Parties to integrate environmental considerations in relation to wetlands into planning decisions in a clear and publicly transparent way";

3. **AWARE** that Action 2.5.1 of the Strategic Plan 1997-2002 sets out to "expand the Additional Guidance on Wise Use by preparing, for a technical session at the 7th COP, the results of a review of environmental appraisal guidelines and examples of current best practice EIA";

4. **ALSO AWARE** that Action 2.5.4 of the Strategic Plan 1997-2002 urges Contracting Parties to "take account of Integrated Environmental Management and Strategic Environmental Assessment (at local, provincial and catchment/river basin or coastal zone levels) when assessing impacts of development proposals or changes in land/water use";

5. **RECOGNISING** Operational Objective 2.4 of the Strategic Plan 1997-2002 which urges Contracting Parties "to provide economic evaluations of the benefits and functions of wetlands for environmental planning processes" and Recommendation 6.10 which notes "that it is vital that all wetland economic values be identified, measured and reported upon to increase national and international awareness of the need for and benefits of wetland conservation;

6. **REAFFIRMING** the role of impact assessment and economic valuation as key tools for assisting the Contracting Parties in their efforts to achieve the objectives of the Convention, especially with respect to the management of sites included in the List of Wetlands of International Importance (the Ramsar List) and in the implementation of the wise use principle;

7. **NOTING WITH APPROVAL** that the issues of impact assessment and economic valuation form elements of the Joint Work Plan between the Ramsar Convention and the Convention on Biological Diversity (CBD) (Resolution VII.4) and that this was endorsed by Decision IV/15 of CBD’s 4th Conference of the Parties;

8. **ALSO NOTING WITH APPROVAL** that CBD’s Decision IV/10c on impact assessment and minimising adverse effects specifically encouraged collaboration between the Convention on Biological Diversity, the Ramsar Convention, the Convention on Migratory Species (CMS), the International Association for Impact Assessment (IAIA), and IUCN-The World Conservation Union on this matter; and

9. **HAVING CONSIDERED** the paper on *The Ramsar Convention and Impact Assessment* presented to Technical Session IV of this Conference, and in particular its advice regarding integrated approaches to impact assessment at the policy, plan, programme and project levels;
10. CALLS UPON Contracting Parties to reinforce and strengthen their efforts to ensure that any projects, plans, programmes and policies with the potential to alter the ecological character of wetlands in the Ramsar List, or impact negatively on other wetlands within their territories, are subjected to rigorous impact assessment procedures and to formalise such procedures under policy, legal, institutional and organisational arrangements;
11. ENCOURAGES Contracting Parties to ensure that impact assessment procedures seek to identify the true values of wetland ecosystems in terms of the many functions, values and benefits they provide, to allow these environmental, economic and broader social values to be included in decision-making and management processes;
12. FURTHER ENCOURAGES Contracting Parties to ensure that impact assessment processes relating to wetlands are undertaken in a transparent and participatory manner which includes local stakeholders, as encouraged through the Guidelines for establishing and strengthening local communities’ and indigenous people’s participation in the management of wetlands (Resolution VII.8);
13. ALSO ENCOURAGES Contracting Parties, as part of their ongoing monitoring and impact assessment practices for sites in the Ramsar List, to apply the Framework for designing a wetland monitoring programme (Resolution VI.1) and the Wetland Risk Assessment Framework (Resolution VII.10);
14. ALSO CALLS UPON Contracting Parties with shared wetlands and river basins to seek co-operative approaches to impact assessment with neighbouring countries as encouraged by the Guidelines for the integration of wetland conservation and wise use into river basin management (Resolution VII.18) and the Guidelines for international co-operation under the Ramsar Convention (Resolution VII.19);
15. REQUESTS the Bureau to continue to work with the Secretariats of the CBD and the CMS as well as with OECD, IAIA, IUCN, and other relevant partners in exploring the use of impact assessments as tools for developing and implementing incentive measures for conserving and wisely using wetland ecosystems; and
16. FURTHER REQUESTS the Scientific and Technical Review Panel and the Ramsar Bureau to work in co-operation with their counterparts from the CBD and other relevant conventions and expert organisations, to review existing guidelines and available information on environmental impact assessment and economic valuation of wetlands, in accordance with the high priority given during the last triennium (Recommendations 6.2 and 6.10). This could be reported as an Internet-based resource kit that examines the use of environmental impact assessment and economic valuation as tools for identifying opportunities to apply the wise use principle.
10. **ANNEX 4:**

**RESOLUTIONS OF THE SAN JOSÉ CONFERENCE.** **RESOLUTION VII.17 ON WETLAND RESTORATION**

*Restoration as an element of national planning for wetland conservation and wise use*

1. RECALLING Recommendation 4.1 which urged Contracting Parties and the Standing Committee to take a range of actions to promote the restoration of wetlands;
2. RECALLING ALSO Recommendation 6.15 which called on Contracting Parties to "integrate wetland restoration into their national nature conservation, land and water management policies";
3. NOTING Operational Objective 2.6 of the Strategic Plan 1997-2002 which, in particular, urges Contracting Parties to identify wetlands in need of restoration and rehabilitation, provide and implement methodologies for this purpose, and establish restoration/rehabilitation programmes, especially in association with major river systems or areas of high nature conservation value;
4. EXPRESSING GRATITUDE to the authors of the paper presented and considered by Technical Session II of this Conference entitled *Restoration as an element of national planning for wetland conservation and wise use*;
5. REITERATING the view expressed in Recommendation 4.1, and further emphasised by the above-mentioned paper, that although restoration or creation of wetlands cannot replace the loss or degradation of natural wetlands, a national programme of wetland restoration, pursued in parallel with wetland protection, can provide significant additional benefits for both people and wildlife, when the restoration is ecologically, economically and socially sustainable;
6. NOTING WITH APPROVAL that in the National Reports submitted for this Conference, 76 Contracting Parties advised that wetland restoration activities are occurring in their countries, but EXPRESSING CONCERN that the level of this activity in most Contracting Parties is not high and that few Parties indicated that the promotion of restoration is part of their National Wetland Policies and related policy instruments;
7. RECOGNISING that capacity building and additional human and financial resources may be required in order to foster the development of restoration and rehabilitation initiatives, but also AWARE that in many countries it is local people/stakeholders who are taking the lead with such initiatives, in recognition of the vital functions, services and benefits wetlands provide;
8. CONSCIOUS that in Technical Session I of this Conference on Ramsar and Water, restoration of wetlands was identified as a priority in the papers presenting guidelines for integrating wetlands conservation and wise use into river basin management, on wetlands as elements of water policy formulation, and on defining Ramsar’s role in response to the global water crisis; and
9. REALISING that through a number of Resolutions, this Conference has adopted guidance for the Contracting Parties on wetland policy formulation (Resolution VII.6), reviewing laws and institutions (Resolution VII.7), involving local communities and indigenous people in wetland management (Resolution VII.8), promoting communication, education and awareness related to wetlands and waterways (Resolution VII.9), integrating wetland conservation and wise use into river basin management (Resolution VII.18), and priorities for wetland inventory (Resolution VII.20), all of which assist with the promotion of wetland restoration in appropriate ways;
10. CALLS UPON all Contracting Parties to recognise that although restoration or creation of wetlands cannot replace the loss of natural wetlands, and that avoiding such loss must be a first priority, a national programme of wetland restoration, pursued in parallel with wetland protection, can provide significant additional benefits for both people and wildlife, when the restoration is ecologically, economically and socially sustainable;

11. URGES Contracting Parties to produce information about wetland losses, including an assessment of the lost processes, functions, composition and values of wetland areas. This information should include data about the restoration potential of these sites and the full benefits of restoration, including identification, at all appropriate levels and using standardised protocols for data gathering and handling as requested in Resolution VII.20, of sites that are a priority for restoring for the benefit of people and the natural environment;

12. ALSO CALLS UPON all Contracting Parties, in the context of approaches which seek to avoid loss of wetlands and of the Joint Work Plan between the Ramsar Convention and the Convention on Biological Diversity, to review, and as necessary amend, their approaches to promoting wetland restoration. In doing so, particular priority should be given to promoting sustainable restoration as part of policy frameworks which promote an ecosystem approach, communication, education and capacity building programmes and support for local stakeholder actions, taking account of traditional norms and the specific role of women;

13. FURTHER URGES Contracting Parties when reviewing their approaches to restoration to examine in detail and address the areas of legislation (Resolution VII.7), incentives for wetland conservation (Resolution VII.15), impact assessment (Resolution VII.16) and transboundary action at the catchment level (Resolution VII.19);

14. URGES Contracting Parties to implement and evaluate projects and programmes as a means of promoting ecologically, economically and socially sustainable restoration of degraded sites, giving full consideration to the elements identified in Annex 1 to this Resolution;

15. REQUESTS Contracting Parties to identify constraints in and solutions for implementing ecologically, economically and socially sustainable wetland restoration, and based on this to develop demonstration projects and targeted technical exchange programmes, reporting on this in their National Reports to Ramsar COP8; and

16. REQUESTS the Ramsar Bureau, in consultation with the Scientific and Technical Review Panel, to identify sources of expertise on specific aspects of wetland restoration and rehabilitation (drawing on established networks such as IUCN’s Commission on Ecosystem Management, DIVERSITAS, Wetlands International’s Wetland Restoration Specialist Group and others), to further develop tools and guidelines, and make this available to the Contracting Parties.
Annex

Wetland restoration and rehabilitation

Elements to consider in restoration and rehabilitation programmes and projects

1. National planning and legislation on protection and sustainable use of nature, environment and water management should be developed to include obligations or, at least, options for wetland restoration. This may also promote the allocation of funds for restoration purposes. It should define restoration objectives and priorities at strategic level, with reference to lost wetland functions, processes and components.

2. Programmes contributing to the fulfilling of international obligations relating to conservation and sustainable use of wetlands should have priority.

3. Multiple purposes such as conservation of biodiversity, provision of reliable food resources, fresh water supply, purification, flood control and recreation may often increase the sustainability and total benefits of a restoration project.

4. Identify and involve all stakeholders at an early stage. The realisation of a project is dependent on co-operation between landowners and/or land-users, public authorities and politicians at different levels, scientific advisory bodies and non-governmental organisations.

5. Monitoring and evaluation of the effects and dissemination of information on the results is needed. Feedback to programme or project operation should be assured, and adjustments made if necessary to achieve the defined targets.

6. Strategic environmental impact assessment and cost benefit analysis are recommended before programme or project approval and implementation.

7. Successfully implemented pilot projects can provide much inspiration and stimuli for the development of forthcoming restoration projects and programmes.

8. General and popular information about effects and consequences before, during and after the implementation of programmes and projects is important.

9. Some important questions to evaluate in advance of projects, in relation to their usefulness and feasibility, include:

   9.1 Will there be environmental benefits, e.g. improved water supplies and water quality (reduced eutrophication, preservation of freshwater resources, biodiversity conservation, improved management of "wet resources", flood control)?

   9.2 What is the cost effectiveness of the project? The investments and changes should in the longer term be sustainable, not only yielding temporary results. Aim for low costs in the construction phase; and aim for low or nil running costs for future maintenance. When establishing the cost effectiveness of the restoration projects, take into account all possible added benefits from restoring the sites.

   9.3 What options, advantages or disadvantages will the restored area provide for local people and for the region? These may include health conditions, essential food and water resources, increased possibilities for recreation and ecotourism, improved scenic values, educational opportunities, conservation of historical or religious sites, etc.

   9.4 What is the ecological potential of the project? What is the present status of the area in terms of habitats and biological values? How is the area expected to develop with respect to hydrology, geomorphology, water quality, plant and animal communities, etc?
9.5 What is the status of the area in terms of present land use? The situation will differ widely between developing countries, countries with economies in transition, and developed countries and with respect to the objectives of restoration and rehabilitation. In particular, marginal lands yielding few benefits in the present situation can often be improved.

9.6 What are the main socio-economic constraints? Is there a positive regional and local interest in realising the project?

9.7 What are the main technical constraints?
11. ANNEX 5:

RESOLUTIONS OF THE SAN JOSÉ CONFERENCE. RESOLUTION VII.23 ON BOUNDARY DEFINITIONS AND COMPENSATION

Issues concerning the boundary definitions of Ramsar sites and compensation of wetland habitats

1. AWARE that Article 2.1 of the Convention obliges Contracting Parties to describe precisely and delimit on a map the boundaries of the wetlands designated for inclusion in the List of Wetlands of International Importance, and RECALLING Resolution 5.3 which recognised that some wetlands were designated for the List before any criteria or information recording system had been developed under the Convention;
2. ALSO RECALLING Article 2.5 which states that "any Contracting Party shall have the right... because of its urgent national interests, to delete or restrict the boundaries of wetlands already included by it in the List", and Article 4.2 which states that "where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat";
3. CONSCIOUS that the Conference of the Contracting Parties does not wish to encourage the deletion or restriction of the boundaries of Listed sites, preferring to see all feasible alternatives examined through rigorous and transparent assessments, in consultation with all stakeholders, before Contracting Parties exercise their right to take such action;
4. NOTING that at present there is no guidance provided by the Convention to assist Contracting Parties considering the deletion or restriction of the boundaries of a Ramsar site to establish a true and internationally acceptable case of urgent national interest, and thereafter how to meet their obligations under Article 4.2 in terms of listing suitable compensatory habitat;
5. RECOGNISING that some Contracting Parties have extensive case law relating to aspects of the determination of urgent national interest, habitat compensation and mitigation;
6. NOTING ALSO the advances in technology which have allowed for a higher resolution of site boundaries than previously available, and the continuing increase in both quantity and quality of data available for Ramsar sites which increases our understanding of their ecological character; and
7. NOTING Resolution VII.24 which addresses the need for compensation for lost wetland habitats and other functions;

THE CONFERENCE OF THE CONTRACTING PARTIES

8. RECOGNISES that there are situations, other than the urgent national interest provision of Article 2.5 of the Convention text, where Ramsar site boundaries may warrant further definition, for example, where boundaries were erroneously or inaccurately defined at the time of listing;
9. REQUESTS the Standing Committee to develop and propose to the 8th Meeting of the Conference of the Contracting Parties (COP8) a procedure for the review of Ramsar site boundaries for reasons other than urgent national interest, without prejudice to other international obligations;
10. RECOGNISES that Australia will prepare two case studies (as referred to in Resolution VII.12) for the development of a more generalised approach to the revision of Ramsar site boundaries in cases other than the urgent national interest, and will provide the outcomes of these case studies in time for consideration at COP8;

11. REQUESTS the Standing Committee, with support from the Bureau, and in consultation with the Scientific and Technical Review Panel (STRP), experts familiar with the Habitats Directive of the European Union, appropriate legal and other experts, and interested Contracting Parties, to develop for consideration and possible adoption at COP8 guidance for the Contracting Parties in interpreting Articles 2.5 and 4.2, if resources allow;

12. CALLS UPON any Contracting Parties that consider the deletion or restriction of the boundaries of a Ramsar site in the urgent national interest prior to COP8, to exercise the highest levels of environmental, economic and social impact assessment which take into consideration the full range of functions, services and benefits offered by the wetland; and

13. URGES those Contracting Parties or organisations with experience in issues of urgent national interest or similar determinations and habitat compensation and mitigation issues to provide any relevant information and materials to the Ramsar Bureau for consideration by the Standing Committee by no later than 30 September 1999.
12. ANNEX 6:

TERMS OF REFERENCE FOR THE PROPOSED TRAINING FOR EIA WORKING GROUP, GIPFZA AND EIA PRACTITIONERS IN EIA TECHNIQUES (AFTER: NEA)

12.1. Introduction

The National Environmental Management Act (NEMA) of 1994 makes provisions for the assessment of certain projects for their potential environmental impacts before such projects could be permitted in the country. The National Environmental Agency prepared Environmental Impact Assessment (EIA) and procedures and guidelines to support certain provisions of the same Act. The Agency expects to finish testing the draft procedures and guidelines next month when it intends to develop it into EIA Regulations.

However, the Agency has recognised the need to develop the expertise of members of the Environmental Impact Assessment (EIA) Working Group and EIA practitioners in the private sector. In this regard, a weeklong training was conducted in The Gambia for same by an international training team in 1997 on the draft EIA procedures of The Gambia.

The Agency now desires to train members of the EIA working group and a larger number of EIA practitioners in the private sector in environmental impact assessment techniques. The training is intended to enable the members of the EIA working group and EIA practitioners in the private sector to:

- Understand the objectives, purpose and methods for Environmental Impact Assessment.
- Assess environmental impacts and to rank the significance of those impacts.
- Elaborate environmental management plans/systems.

To this end the Agency is seeking the services of an international trainer to conduct a training programme in The Gambia for members of the EIA working group and EIA practitioners in the private sector.

12.2. Tasks

The international trainer will work in collaboration with the Agency’s Senior Programme Officer for Environmental Impact Assessment and shall perform the following tasks:

- Prepare a ten-day training programme that covers, but is not restricted to the following:
  - Simple methods for identifying potential environmental impacts,
  - Methods for describing the environmental setting
  - Appropriate environmental indicators for describing the affected environment.
  - Methods for predicting and assessing impacts and their significance.
• Methods for evaluating alternatives and making a decision.
• Principles for preparing environmental management plans/systems as part of the EIA process.
• Methods for reviewing environmental impact statements effectively.
• A project designed to enable the trainees practice their newly acquired skills.

• Prepare relevant training materials on 1 above (two of the training sessions will be devoted to
  the legal and institutional framework for EIA in The Gambia and shall be conducted by national
  experts).

• Submit to the Agency at the end of the training:
  ➢ Two hard copies of a report on the training programme.
  ➢ One electronic copy of the report that is MS windows Office 97 compatible.

• Make recommendations for follow up activities.

12.3. Qualifications and Experience

The trainer(s) is expected to have the following minimum qualifications and experience:
• A postgraduate qualification in one of the natural sciences or in civil engineering.
• Member of a recognised professional EIA of environmental management body in the country
  where he/she is registered.
• Five to ten years post qualification environmental impact assessment experience, which must
  include training assignments in developing countries.
• Excellent written and spoken English as well as good communications skills.
13. ANNEX 7:

PROCEEDINGS OF THE WORKSHOP ON THE ESMP, BANJUL, 26 JUNE 2001

13.1. Workshop Programme:

GAMBIA INVESTMENT PROMOTION AND FREE ZONES AGENCY/NATIONAL ENVIRONMENTAL AGENCY

ONE-DAY REVIEW WORKSHOP:
Environment and Social Management Plan of Trade Gateway Project

Tuesday 26th June 2001, SeneGambia Beach Hotel, Kololi

9.00 - 9.30 Registration of Participants

9.30 - 9.45 Opening Ceremony

Welcoming Remarks by Chairperson, Mr. M. A. Cham, Executive Director, NEA

Statement by Chief Executive, Gambia Investment Promotion and Free Zones Agency

9.45 - 10.15 Presentations

Update on the Trade Gateway Project by Director of Free Zones

Proposed engineering works at the free zones by MAJ Consultants

10.15 - 13.30 Discussions

ECOLAS will guide the workshop through a systematic review (section after section) of the Draft Environment and Social Management Plan

14.30 - 15.30 Discussions and conclusion
13.2. List of participants

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<tr>
<th>Name</th>
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<tr>
<td>Abubaka Nyabally</td>
<td>Islamic Relief Association</td>
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<td>Nancy Njie</td>
<td>NEA</td>
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<td>Nyanya Jobe</td>
<td>Dept. of Tourism</td>
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<td>Bala Saho</td>
<td>National Council for Arts &amp; Culture</td>
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<td>Paul Van Haecke</td>
<td>ECOLAS</td>
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<td>Kathleen Nysten</td>
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<td>Dirk Lamberts</td>
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<td>Benjamin Carr</td>
<td>C/O ECOLAS</td>
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<td>Linda Barnett</td>
<td>Dept. of Parks &amp; Wildlife Management</td>
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<td>M. N. Cham</td>
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<td>Sarriang Ceesay</td>
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<td>Sakou Mboge</td>
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<td>Yaya Kassama</td>
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<td>Lamin A. M. Njie</td>
<td>DOSTIE</td>
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<td>Essa Jallow</td>
<td>Dept. of State for Works, Communications &amp; Information</td>
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<tr>
<td>Fafa Sanyang</td>
<td>Geological Unit, DOSTIE</td>
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<td>Saikou K. Sanyang</td>
<td>Physical Planning Department</td>
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<td>M. A. Cham</td>
<td>NEA</td>
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<td>F. J. Ndoye</td>
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<td>Marie Senghore</td>
<td>Maj Consult</td>
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<td>Naffie Macdouall</td>
<td>Gambia Ports Authority</td>
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<td>Yusupha Kah</td>
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13.3. Summary of workshop activities

13.3.1. Specific issues discussed during the workshop:

- Mitigation for habitat loss at the airport / relocation of wildlife:
The TGP site will occupy only part of the airport area and sufficient land is considered to remain available to mitigate the negative impacts
The Abuko buffer zone will compensate some of the habitat lost

- Landscaping:
Landscaping at the sites should use to the maximum extent existing landscape elements

- Archaeological sites:
A procedure should be established in case of findings at a site (work stopped, period for National Council for Arts and Culture to examine the site, etc.)
Timing of review by NEA:
The time required by NEA to review the TGP ESMP and the environmental impacts and subsequent issues for the specific activities needs to be established so that the requirements for investment are met. This is to be included in the specific operational guidelines and procedures that need to be elaborated between GIPFZA and the NEA.

13.3.2. Comments received from Mr. Fafa Sanyang, Chief Geologist, Geological Unit

The point made on the wider scope of activities of the Geological Unit is taken and the ESMP has been adjusted accordingly.

13.3.3. Comments received from Mr. Lamin A. M. Njie, Ag. Principal Energy Officer, DOSTIE

1. The incomplete paragraphs have been completed
2. The mitigation measures matrix makes a distinction for the activities that are site specific. The relevance of the mitigation measures for each site can be deduced from the impacts assessment matrix, where all mitigation measures are indicated. The mitigation measures matrix is merely an elaboration on these measures.
3. Page 51: the missing text has been completed

13.3.4. Reply to comments from Saikou K. Sanyang, Department of Physical Planning & Housing

1. Bund Road as a possible location for the TGP project site. It has become apparent recently that the Bund Road has been abandoned as a potential site for the location of the TGP: recent detailed engineering plans ordered by GIPFZA only provide detailed plans for the Airport site.
2. All relevant effects and impacts of the possible implementation of the TGP at the Bund Road were taken into consideration in the screening and scoping exercises; the information contained in the EIA of October 2000 has been reviewed and updated in the ESMP
3. For the specific critical issues that are requested to be revisited:
   - The functions of the Bund Road site as an important wetland:
     - its importance as an aquatic habitat and area for rare birds has been extensively treated in the impacts assessment and mitigation measures have been proposed; it is important to keep in mind that the mitigation required for the loss of some of the Ramsar site includes all ecological aspects of the habitat that will be lost. The procedure for compensation of the lost area will cover all these aspects. It is not possible at this point to predict this will develop since this depends on the negotiation procedure between the Government of the Gambia and the Ramsar Bureau.
     - based on the information received about the implementation of the TGP, no mangroves are present in the actual project site. However, there are important mangroves areas outside the proposed project area, which are mostly part of the Ramsar site. Impacts of the implementation of the TGP at Bund Road site will be included in the compensation procedure
     - its drainage role for the island of Banjul; this appears to be an element to be taken into consideration in the detailed design and engineering of the site, and is not really an environmental issue as such.
• The impact on the air quality at the Bund Road. Here two elements play a role. At this stage, the only activities that are known to be developed on the site is the operation of one 650 kW power generation plant, running on diesel fuel. The environmental impact on air quality that may come forward from this small installation is indeed very small and will not require mitigation. Secondly, the impact of specific activities on air quality in the Bund Road is to be studied at the time the activity is submitted to NEA for review for compliance with the ESMP, and may require specific study as part of an additional EIA.

• The holistic approach, albeit difficult to apply, for the entire area is indeed recommended as it will take into consideration not only the contribution of each activity but will also look at the results of cumulating effects. The latter should be part of additional EIAs, if and when required. The holistic approach is hard to implement because the development of activities will depend on unpredictable private sector investment and activities.

• Ozone depleting effects and global warming are issues that should rightfully so be assessed when activities are proposed, and should be part of the standard review procedure and additional EIAs.

• The issue of consequences of drainage changes are not considered a part of the environmental impacts assessment. As no detailed design and engineering plans are available for the Bund Road at this stage, it is not possible to assess if this issue and the possible consequences will have been sufficiently taken into consideration in the design. This is an element that will be reviewed when the specific construction and development plans are submitted to NEA for review.

• The specific additional mitigation measures proposed should indeed be taken into consideration when specific activities are considered.
14. **ANNEX 8:**

**COMMENTS RESULTING FROM THE PUBLIC CONSULTATION OF THE ESMP IN THE GAMBIA, JULY - AUGUST 2001**

Only one comment was received during the public access period for the draft ESMP; it was considered not relevant by NEA.