



Exploration & Production

GENERAL SPECIFICATION

ENVIRONMENT

GS EP ENV 120

Environmental impact assessment of E&P activities

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1. Scope

1.1 Purpose

An Environmental Impact Assessment (EIA) study is systematically undertaken during the initial stage of any offshore and onshore E&P project, including seismic survey, exploratory drilling, field development and decommissioning (called "Project" for the purpose of this document).

The object of the present specification is to define the requirements for the preparation of an EIA study, and to provide the CONTRACTOR in charge of the study with instructions for its design and presentation.

1.2 Application

This specification applies to all operated entities answerable to the Total Exploration & Production branch, and to those co-operated activities to which the Total Reference System applies.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
ISO 14001	Environmental Management Systems – Requirements with guidance for use

Professional Documents

Reference	Title
UNEP/OGP Guidelines	Environmental Management in Oil and gas exploration and production
OGP Guidelines	Principles for impact assessment – the environmental and social dimension
World Bank/IFC Standards	Operational Policy 4.01 Natural Habitat 4.04

Regulations

Reference	Title
1992 OSPAR Convention	Convention on the protection of the marine environment of the North-East Atlantic

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP ENV 001	Environmental Requirements for Projects Design and E&P Activities
GS EP ENV 111	Environmental Baseline Study of an Onshore site
GS EP ENV 112	Environmental Baseline Study of an Offshore site
GS EP ENV 113	Environmental Baseline Study of a Coastal site

3. Definition of an environmental impact assessment study

The Environmental Impact Assessment (EIA) study begins by a description of the Project objectives and technical aspects, and includes a presentation of the main Environmental Baseline Study (EBS) results and socio-economic conditions.

It gives a detailed description of the effects and potential impacts of the Project on the natural and human environment, and of their extent.

The measures envisaged for eliminating, limiting or offsetting such impacts are analysed, the substantiation for the chosen solutions in the light of the different alternatives proposed is provided, and the level of significance of the residual impacts after their implementation is assessed.

Finally, the EIA provides recommendations for the implementation of an Environment Management Plan (EMP), consisting of monitoring and audit programs, contingency plans, etc., during the construction, development, production and decommissioning phases.

4. Role of contracting parties and confidentiality

CONTRACTOR is responsible for compiling the EIA study in compliance with the present document, and with the Particular Specification developed for each Project EIA, in order to specify the Scope of Work and provide all additional information adapted to the Project.

For large Projects or socially sensitive areas, a separate Particular Specification may need to be developed for a specific Social Impact Assessment (SIA).

The exact and complete name of the authors of the study shall appear on the final document.

All subcontracting for the study drafting, presentation or editing not specified in the contract shall be submitted to COMPANY for approval.

CONTRACTOR shall strictly respect the regulations regarding the right to reproduce documents and will preserve the confidential nature of certain documents; in this respect CONTRACTOR shall be bound by professional secrecy.

COMPANY reserves the right to supervise the drafting and modify chapters or parts of the document drafted by the CONTRACTOR.

5. Documentation, Reports and Schedule

5.1 Documentation

CONTRACTOR shall avail himself of all documents, or those considered necessary for the proper understanding of the Project and of the environmental studies previously undertaken, and supplied by COMPANY.

5.2 Draft EIA reports

CONTRACTOR will be requested to provide a routine progress report.

Draft reports will be requested by COMPANY according to the schedule defined in the Contract.

A first draft report will be written including a detailed development of the different chapters.

COMPANY comments shall be included in the Draft Reports until the final report is approved by COMPANY.

5.3 Final EIA report

The presentation of the final report shall comply with the instructions given to CONTRACTOR by COMPANY.

5.4 Integration of comments after conferring with administrative bodies and public consultation

The comments and remarks gathered during the administrative inquiry and public consultation shall, depending on circumstances, either be integrated in a final version of the study, or be the subject of a complementary report covering the points raised (as specified in the Particular Specification).

5.5 Deliverables format

The **Report Model (.dot)** provided by COMPANY shall be used.

The reports shall be provided to COMPANY in a PDF file.

The schedule and number of copies will be defined in the Particular Specification.

In addition to the paper print-out, and PDF file(s) the reports (including illustration and maps) shall be delivered on CD-ROM with PC format and preferably using the following softwares:

- Word® for texts.
- Excel® for tables and charts.
- Autocad®12 or similar for maps and layouts.

A Powerpoint presentation of the study shall be provided to COMPANY.

5.6 Quality Control of the Reports

Documents shall be presented in easy reference form. Prior to being submitted to COMPANY, documents shall be properly finalized and checked through the CONTRACTOR Quality Control Process.

Illustrations will be used to clarify and "lighten" the texts and provide an overall view of the issue. Synoptic tables, impact grids or evaluation matrices will provide easy reference.

COMPANY reserves the right to refuse approval of any document which, in its opinion, is in an insufficient state of completion, or which is not presented in a logical easy-to-consult form.

A glossary of scientific and technical terms shall be attached to the study.

5.7 Study schedule

CONTRACTOR shall establish a schedule integrating the various environmental studies to be run from the time of Contract award and including data acquisition up to the presentation of the final report and its approval.

This schedule shall allow for the time required for administrative procedures.

This schedule shall be submitted to COMPANY for approval.

6. General content for an EIA Study

The following model contents adopted by COMPANY shall be adhered to except when a specific content is required by local regulation.

The EIA study shall include as a minimum the following sections:

- Section 0: Executive summary
- Section 1: Background and EIA Methodology
- Section 2 : Policy, legal and administrative framework
- Section 3 : Project Description and identification of emissions
- Section 4 : Description of the Baseline Environmental data
- Section 5 : Impacts assessment on the environment and mitigation measures
- Section 7 : Analysis of alternatives (when relevant)
- Section 8 : Recommendations for an Environmental Management Plan

6.1 Section 0: Executive summary

The executive summary, three (3) to ten (10) pages according to the magnitude of the Project, shall give the general lines of the Project and its main impacts, and shall highlight the main conclusions drawn regarding the mitigation measures taken to protect the environment according to the local constraints.

6.2 Section 1: Background and EIA Methodology

An introduction shall describe the main issues of the Project, its background and alternatives, and the environmental context and sensitivities.

The methodology used to evaluate the potential and residual impacts shall be described in this section of the EIA. The methodology developed by COMPANY (see **Appendix 1**), based on [World Bank guidelines](#) and [ISO 14001](#) standard approach, is recommended. Any other method proposed by CONTRACTOR shall be submitted to COMPANY for approval.

6.3 Section 2: Policy, legal and administrative framework

COMPANY Policy, legal and administrative framework within which the EIA is carried out shall be detailed, including international / regional conventions to which the country is a party.

The standards limits adopted for the Project emissions, in accordance with regulatory constraints and [GS EP ENV 001](#) requirements, shall be summarised in a table.

6.4 Section 3: Project Description

The proposed Project characteristics and all associated facilities (e.g., seismic vessels, drilling rigs, pipelines, subsea systems, power generation facilities, storage tanks, living quarters, construction camps, etc...) shall be concisely described for all its relevant phases: exploration, construction, installation, commissioning, process and operations. Decommissioning options shall also be considered. This description shall reflect the Project situation at the date of the EIA issue, before any activities start on site, but more generally at the end of the Basic Engineering phase for a Development Project. However, the EIA may be subject to some changes, in its details, during the Detailed Engineering.

A tentative schedule of the Project shall be attached.

All emissions to the environment, shall be quantified, to the extent possible, for each phase of the Project and summarised in a synthetic table.

Maps, figures and synthetic diagrams shall be used.

Project atmospheric emissions, and in particular, greenhouse gas emissions (*GHG*) assessment consists of identifying all the emission sources - mainly the process but also the associated sources like drilling and transport - and of calculating the emissions during normal and/or non-routine operations such as start-up, shutdown, compressor failure,.... To do this, the volumes of fuel gas used for energy production, the excess associated gas which is flared and the cold vented gas shall be quantified. Conversion factors specific to each gas are used to convert these volumes into metric tons of equivalent CO₂ according to the methodology approved by COMPANY.

For production activities, the **GHG intensity** is obtained from the ratio of the emissions (in kt eq.CO₂) to the discounted net production (in Mboe) defined as the total exported production plus the auto-consumption (fuel gas).

6.5 Section 4: Description of the Environment

The physical, biological and socio-economic context of the Project shall be described based on the specific detailed baseline studies results implemented according to [GS EP ENV 111](#), [GS EP ENV 112](#) and [GS EP ENV 113](#).

Sensitivities of the environment shall be highlighted. Maps and illustrations shall be used.

6.6 Section 5: Impacts on the Environment and Mitigation measures

Based on the methodology described in Section 1 of the EIA, all potential impacts of the Project, on each of the Environmental components, for each phase of the Project up to the decommissioning period, during normal and non-routine functioning of the installations, shall be predicted and assessed.

The area of influence of the Project shall be defined and justified.

A Modelling study may be required to assess atmospheric emissions and/or liquid effluents discharges dispersion.

The social-economic impact will be evaluated in simple terms.

Mitigation measures shall be identified, assessed at a technical and economic level, and selected to eliminate or limit the impacts of the Project. The mitigation measures shall be approved by the Project.

The residual impacts on the environment shall be assessed and categorised according to the defined methodology.

In accordance with the [ISO 14001](#) standard, the significant residual impacts shall be identified, using the methodology developed in the Affiliate Environmental procedure when it exists. When such procedure does not exist, the CONTRACTOR shall propose a methodology to be validated by COMPANY.

When mitigation is not possible to reduce the impact at an acceptable level, offset measures shall be recommended by CONTRACTOR.

6.7 Section 7: Analysis of alternatives (when relevant)

Feasible alternatives to the proposed Project location sites, technology, design and operation shall be evaluated and assessed in terms of their potential environmental impacts. Selected options shall be justified.

6.8 Section 8: Recommendations for an Environmental Management Plan

This section shall present the Environmental Management Plan (EMP) to be developed to manage all environment aspects and ensure minimization of the Project impacts. The Plan shall be based on the classical “*Plan Do Check Act*” principle.

The EMP which will be developed during the engineering phases to be implemented during the Construction and Operations phases is out of this scope.

Health, Safety and Social issues are addressed in specific plans which are out of this scope.

The EMP shall address all the EIA requirements, for all operational phases (Seismic survey, Drilling, Facilities Construction and Operation) of the Project and shall cover the following aspects:

- Waste management,
- Chemical management,
- Oil Spill Contingency Plan,
- Training program,
- Environmental monitoring,
- Environmental auditing.

Appendix 1 Recommended Methodology for impact evaluation

To assess the impacts, a systematic approach based on that developed by the World Bank and [ISO 14001](#) standard has been chosen by COMPANY.

The first step consists of identifying the **sources of impacts** and potential **effects** of the project, then the resulting **impacts** or consequences on the environment, and finally of **evaluating the mitigation measures** to be put in place to reduce these impacts.

After implementing the mitigation measures, and gauging their efficiency, the next step consists of **analysing the residual impacts** of the Project on the environmental receiver, according to its sensitivity.

In both cases, i.e. before or after the implementation of the mitigation measures, the method adopted is the same: after an exhaustive inventory of these potential consequences, each is analysed using a **Leopold** type **matrix**, produced by defining the sources of impact on its horizontal axis and the environmental targets on its vertical axis (Table 1).

1. Evaluating the potential impacts

The evaluation process for each effect aims to assess the **severity of the impact** on the receiving environment.

For each source of impact the **intensity** of the effect is defined according to the following criteria: the effect may be positive or negative, direct or indirect, reversible or non reversible, short-term or long-term. The **geographical extent** of this effect is also taken into account, from a localised effect on all or part of the site, to what might be a global scale. Finally, we must also look for any possible **cumulative effect** due to the proximity of other activities, which would amplify the consequences of the Project.

In some cases, when the effect can be quantified, it may be modelled, e.g. in the case of air emissions or liquid effluent discharges.

The **sensitivity** of the environmental receptors is characterised according to a number of criteria like, for example, the presence of protected areas or sensitive species. The sensitivity level is mostly defined by the specialists concerned, during the Environment Baseline Study (EBS).

The **severity** of the impact is then defined by comparing the *intensity of the effect* of the project and the *sensitivity* of the environmental receptors. It is qualified according to a scale which ranges from "negligible" to "major", based on the World Bank's definitions (Table 2). An example matrix is given in Table 3.

Table 1: Extract from a cause-effect matrix (Leopold type) assessing the potential effects of a project

Environmental Receptors		Potential Effects					
		Physical disturbance	Air emissions	Offshore discharges	Noise	Solid waste	Footprint
Source of impact		Note 1	Note 2	Note 3	Note 4	Note 5	Note 6
Offshore sediments	Sediment quality	-	-	4 4 1	-	-	-
	Physical disturbances	3 3 1					
Water column	Physical characteristics			2 2 1			
	Chemical characteristics			2 2 1			
Air	Air quality (Offshore)		2 4 2				
	Contribution to greenhouse effect		2 4 2				
Fauna	Benthic communities	3 3 1		2 2 1	1 1 1		1 1 1
	Turtle/Cetaceans	1 1 1		1 1 1	2 2 1		1 1 1
Coastal environment	Coastal flora	1 1 1					
	Coastal fauna				1 1 1		1 1 1

Key:

Severity = Intensity x Sensitivity	
1	Negligible
3-4	Minor
5-9	Moderate
> 9	Or I = 4 Major

I, Intensity : 1 to 4

I
Severity
Se

Se, Severity of receiving environment (1 to 4)

Note 1: Well drilling, installation of SPS/UFL elements and pipeline, construction activities.

Note 2: Drilling rig, well tests, installation ships, logistics, construction activities.

Note 3: Cuttings, effluents from SPS/UFL pipeline installation activities, effluents from FPU operation.

Note 4: Drilling, installation of SPS/UFL elements and pipeline, construction activities, production operations.

Note 5: Hazardous and non-hazardous solid waste generated in all phases of the Project.

Note 6: Drilling rig, installation ships SPS/UFL and pipeline, FPU, onshore installation.

Table 2: Definition of impact severity according to the World Bank

Criteria	Severity
Substantial adverse changes in an ecosystem. Changes are well outside the range of natural variation and assisted rehabilitation is required.	Major
Moderate adverse changes in an ecosystem. Changes may exceed the range of natural variation. Potential for natural recovery in the medium term is good. However, it is recognised that a low level of impact may remain.	Moderate
Minor adverse changes in an ecosystem. Changes might be noticeable, but fall within the range of normal variation. Effects are short-lived and natural recovery takes place in the short term, however, it is recognised that a low level of localised impact may remain.	Minor
Changes in ecosystems that are unlikely to be noticeable (i.e. well within the scope of natural variation).	Negligible
Changes resulting in positive, desirable, or beneficial effects on an ecosystem.	Positive

Table 3: Example of characterisation of impacts on biodiversity

Effect intensity Ecosystem sensitivity	Very low	Low	Medium	High
Low Sensitivity or local ecosystem value	Negligible	Minor	Minor	Moderate
Medium Sensitivity or national ecosystem value	Negligible	Minor	Moderate	Major
High Sensitivity or International ecosystem value	Negligible	Moderate	Major	Major

2. Implementation of mitigation measures

Once the significant potential impacts have been characterised, the next step consists of defining **nuisance reduction measures (mitigation)**. These measures should be selected based on the Best Available Technologies concept, according to the **OSPAR Convention** definition. Table 4 illustrates some of the measures that can be used according to the type of project and the identified impact.

Table 4: Examples of nuisance reduction measures which can be taken

Project Items	Main mitigation measures
Land occupation	Limitation of the occupied area (reduction of physical impact, aesthetic aspects), choice of facility location or pipe route to avoid sensitive areas
Exploration and Development drilling	Selection of drilling fluids and additives, management of drill cuttings and effluents, well architecture, protection of aquifers and of surface waters
Design of facilities	Site watertightness, drainage segregation, retention ponds, effluents treatment systems, effluents disposal systems, monitoring wells (piezometers), noise abatement, acoustical insulation, facilities to be removable,...
Construction works	Works control (waste, base camps management, spills management,...)
Liquid effluent management	Water collection, treatment and disposal, storage tanks protection, produced water reinjection, monitoring system (online analysers, sampling points,...)
Control and reduction of atmospheric emissions (SO ₂ , CO ₂ , NO _x , VOC, ...)	No venting, No flaring in normal operations, Low NO _x burners, emission control, waste handling, dispersion calculations in non routine situations (start ups, process trips, ...), GHG emission control
Waste management	Waste volumes / toxicity reduction by design, reuse / recover / recycling options, collection, storage, and elimination processes
Chemicals management	Selection of products, handling, storage design, follow up of elimination of waste products
Environmental Management	Definition of an Environmental Management Plan : Elements for audit and monitoring programmes for seismic, drilling, construction and production, Definition of the prevention policy and the elements for the spill response plan

3. Offset measures

If the envisaged attenuation measures are not considered to be sufficient, it is within the scope of the EIA to examine and recommend the means to be used to reduce the consequences of this residual impact to the minimum.

This can be done by offset measures like, for example transplanting corals to reconstruct an ecosystem in a sheltered area of the site or Mangrove replantation actions.