

**Appendix B**  
**Terms of Reference**

**TERM OF REFERENCE FOR  
ENVIRONMENTAL IMPACT ASSESSMENT**

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## 1.0 INTRODUCTION

In 2001, Geovic applied for a Mining Convention and Permit that would give the company exclusive rights to develop the cobalt and nickel deposits over an initial 25-year term. On August 1, 2002, the Republic of Cameroon and Geovic Cameroon signed the Mining Convention assigning the mining rights and on April 11, 2003, the President of Cameroon issued the Mine Permit allowing the company to move forward with its project development initiatives.

The Mine Permit area is a 1,631 square kilometer 18-sided polygon that includes seven main areas of mineralization: Nkamouna, Mada, Rapodjombo, North Mang, South Mang, Messea and Kondong. Land within the Mine Permit is designated as “multiple use” evergreen forest that has been reserved exclusively for mineral exploitation. Geovic’s immediate plan is to develop the Nkamouna deposit using open pit mining, physical beneficiation and agitated leaching to recover the cobalt and nickel values. The other deposits will be considered for development as part of Geovic’s longer-range plans.

The project is located in the Haut Nyong Division, East Province of Cameroon, Africa about 630 road kilometers from the seaport of Douala and 380 road kilometers from the capital of Yaounde. The closest town is Lomie approximately 26 kilometers west southwest of the project site.

A 33 km road from Lomie to Kongo village and a 9 km road from Kongo village provides access to the deposit from the south. Private logging roads may also be used to access the project from the north.

Kongo (population about 200) is the nearest village to the mine site. The town of Lomie (population 3000) contains government offices, a limited hospital, general roadside shops and motels. Total population in the Lomie district is 20,000 and is mainly comprised of Bantu and Baka Pygmie groups.

The project will have notable socio-economic impacts on the Lomie District which will be identified in the site-specific EIA study. It will bring significant advantages to the District in particular and Cameroon in general.

The mining permit is surrounded by forest concessions; the main protected area of the region is the Dja reserve located over 40 kilometers away. In accordance with the Cameroon environmental law of 1996, and the forest law of 1994, the characteristics of the proposed project require the company to undertake an environmental impact assessment.

In accordance with the provisions of Article 8.1, GEOVIC shall prepare an Environmental Impact Assessment to World Bank standards pursuant to the application for each Mining Concession under the Exploration Permit. The following Terms of Reference specifies the basis for those assessments.

These Terms of Reference (TOR) provide guidance for a comprehensive EIA of the entire Mining Concession area, production areas, infrastructure, and support facilities addressing the construction, operation, and decommissioning of each project component in terms of:

- Impacts on biological diversity, wildlife and wildlife habitat, soil erosion and sedimentation, air quality, surface and subsurface hydrology and water quality, and freshwater biota;
- Impacts on cultural and archaeological resources, local residents, employment patterns and skill levels, human health, land tenure, settlement and use patterns;
- Waste management practices and materials handling and storage;
- Traffic along proposed roads and potential new access to remote areas and wildlands by local residents; and
- Seismic and geologic risk, upset event prevention, emergency response, and worker safety and protection.

The site-specific EIA will be completed by Knight-Piesold and Co., an internationally recognized environmental consulting firm with strong credentials in a wide range of environmental and socioeconomic disciplines, and will utilize local and regional expertise when available and practical.

The EIA will provide the foundation for an environmental management plan (EMP) to facilitate communication and coordination during the design, construction, operation and decommissioning of the project components. It also will provide sufficient information on all aspects of the project for review by government resource agencies, non-governmental organizations (NGOs), and other interested parties and affected groups.

The TOR also recognizes that extensive baseline environmental and socioeconomic assessment and consultation with the Cameroon government and NGOs already has been undertaken as part of a project feasibility evaluation. This baseline environmental and socioeconomic information has allowed this TOR to focus more on potential issues and impacts which require further investigation in order to develop effective mitigation.

## 2.0 OBJECTIVES

The objectives of the EIA are to ensure that the project is sound environmentally and that any issues of concern relating to the biological, physical, and socioeconomic environments and other applicable Government of Cameroon regulations and World Bank environmental and occupational health and safety guidelines are recognized early and considered in the project design. The EIA will cover a variety of topics including: a project description; physical, biological, and socioeconomic baseline data; identification of potential environmental and socioeconomic impacts from construction, operation and decommissioning; analysis of alternatives; mitigation measures; suggested environmental management and training requirements; regulatory considerations; and suggested monitoring program provisions.

A preliminary review of existing biological, physical, and human environmental baseline data already has been performed to identify and assess available information relevant to the project. These existing baseline data will be used, where appropriate, in place of new studies. When additional baseline data is critical to the impact assessment or environmental mitigation/management process and requires field work, the data will be collected during the EIA preparation period; seasonal variation will be captured either through extrapolation of existing data or specified in the EIA to be addressed during later stages of project development.

Planned interagency coordination and consultation with affected agencies, NGOs, communities, and individuals will help to identify and evaluate potential impacts of the proposed project and formulate measures to avoid, reduce, or compensate for such impacts. A comprehensive, ongoing, environmental management and monitoring plan also will be described in the EIA.

In order to meet the EIA objectives, this TOR focuses on identified issues and impacts for which further field investigations should be considered in order to document baseline conditions and adequately mitigate unavoidable impacts. This approach also allows flexibility in dealing with previously unidentified issues and a shifting of focus to issues requiring more information for better understanding.

### 3.0 ENVIRONMENTAL IMPACT ASSESSMENT REQUIREMENTS

For a project such as this a full EIA is required, following appropriate World Bank guidelines, including:

- Sections 117, 118 and 119 of the Foreign Assistance Act
- Good Practice Manual “Doing Better Business through Effective Public Consultation and Disclosure”

The EIA will conform to World Bank guidelines including:

- Environmental Health and Safety Guidelines (1994)
- Pollution Prevention and Abatement Handbook (1998)
- Operational Directive 4.20 (Indigenous Peoples)
- Operational Policy Note 11.02 (Wildlands)
- Occupational Health and Safety Guidelines (1998)
- Technical Paper No. 55 (Techniques for Assessing Industrial Hazards: A Manual)
- The Forest Sector: A World Bank Policy Paper (1991, updated October 2002)

Appendix A lists a number of regulations and guidelines which would be considered during preparation of the EIA.

The EIA will identify national, regional, or local laws and/or regulations pertaining to environmental review or assessment in Cameroon.

The EIA shall conform to all relevant national laws, regulations and guidelines concerning the subject notably :

- The Environmental Law of 1996 – Law No 96/12 of 5 August 1996
- Cameroon Water Code – Law No. 98-5 of 14 April 1998
- Cameroon Mining Code – Law No. 001 of 16 April 2001
- Environmental law on classified units – Law No 98/015 of 14 July 1998
- The Law on normalization

The EIA should also conform to all international conventions ratified by Cameroon.

The proposed project requires an environmental review under Cameroonian law, which is based on the French system of Classified Installations. Regional or local effluents discharge limitations, and occupational health and safety standards will be identified, where they exist, and will be incorporated into project design standards or guidelines. Where no appropriate official standards are available, standards or guidelines based on accepted industry operating practice will be developed suitable to the project and existing environmental conditions.

#### **4.0 SCOPE OF WORK**

The scope of work for this EIA was developed to address specific project requirements pursuant to the Mining Convention and Mining Permit, to ensure an environmentally acceptable project is developed, and to respond to issues of concern by appropriate organizations. The EIA will assess all of the proposed project components, including their construction, operations and decommissioning activities. Specifically, the EIA will include:

1. An executive summary
2. A project description
3. Characterization of the existing physical, biological, and socioeconomic environment
4. Legislative and regulatory considerations
5. An assessment of environmental and socioeconomic impacts of project construction, operation and maintenance, and decommissioning
6. An analysis of alternatives
7. Recommended mitigation measures, environmental and socioeconomic management, and training requirements
8. An assessment of the country's capacity to implement EIA recommendations
9. Monitoring program provisions
10. Inter-agency coordination and public/NGO participation

The EIA will comply with Cameroon guidelines and regulations specified by The Environmental Law of 1996 – Law No 96/12 of 5 August 1996. Sources of available baseline information for the project area already have been identified, along with apparent data deficiencies. Additional information compiled during the baseline environmental and socioeconomic analysis will be used as a foundation for the EIA. Specific field studies have been designed to collect additional data on environmental and socioeconomic conditions within the project affected areas.

A Geographic Information System (GIS) will be used for sensitivity mapping. Where necessary, GIS will be used as an analytical tool in the assessment and documentation of impacts for the EIA.

#### **4.1 TASK 1: DESCRIPTION OF THE PROPOSED PROJECT**

A project description will be prepared under this task as a joint effort of Geovic and its environmental and engineering contractors. Information on project-related development sites will be provided along with a description of pre-construction, construction, operations, maintenance and decommissioning activities; scheduling; staffing and support; facilities and services; infrastructure-related activities; and duration of operation of project components.

#### **4.2 TASK 2: DESCRIPTION OF THE ENVIRONMENT**

Existing environmental (physical, biological, and human) characteristics of the study area will be described and evaluated. Information will be included on environmental changes anticipated from other potential developments prior to and during the construction and operation of the proposed project. Specific studies will be conducted to access identified information sources in Cameroon and to obtain additional field data. Field studies will be directed and focused narrowly on collecting data that is applicable to the project and necessary to understand and mitigate anticipated potential impacts.

Field investigations will cover all zones likely to be directly influenced by project development. Detailed field investigations will focus mainly on the mineral extraction areas (production areas).

Mapping will be provided at appropriate scales to illustrate the regional setting of the project-related facilities, as well as surrounding areas likely to be affected by the project. Mapping will include topographic contours (where applicable), locations of major surface waters, roads, railways, cities and towns, parks and reserves, and political boundaries. Additional land use (industrial, residential, commercial, agricultural, and institutional) information also will be provided, along with locations of important archaeological and cultural centers and touristic sites, as identified by the socioeconomic field studies.

#### **4.2.1 Physical Environment**

A description of the physical environment within the proposed project area will include available information on:

- Climate
- Geology, soils, stratigraphy, seismicity, topography
- Hydrology (drainage patterns)
- Hydrogeology (groundwater)
- Water Quality

Much baseline information already has been collected as part of the previous environmental analysis for the proposed project. Detailed geologic information that was collected in the course of the exploration program is sufficient for characterizing geologic resources and for assessing project impacts. Pertinent geologic data include topography, soil type and depth, substrate type and composition, erosion potential, and metals concentrations in various strata.

Climatic data will be collected from appropriate locations within the project area to complement existing regional climatic data. These data will be used to characterize ambient conditions, assess potential environmental impacts of air movement, and other climatic factors in relation to mine development. Parameters to measure include: temperature, rainfall, wind direction, and wind velocity.

Additional field studies will be conducted to gather information on the existence and use of surface water and potable groundwater resources in the project area and other surface water resources (major streams and wetlands) that could be affected adversely by project construction or operations. Information will be collected on surface and subsurface water quality parameters, depth to groundwater, stream flow rates, and a visual assessment of the baseline condition of the water resource in order to assess the potential effects to water resources, to develop waste management plans to minimize impact potential, and to develop soil erosion control plans to minimize soil loss during the proposed project.

Field work will be undertaken in one season only, but observations will be made of other seasonal effects such as floodline debris, streambank and streambed condition, and evidence of existing erosion. This information will be used in combination with local expertise to extrapolate seasonal effects and to plan any necessary monitoring programs to assess identified hydrologic impacts. These monitoring programs, if necessary, will be designed to be conducted during later stages of the project by local technical resources such as government agencies, local consultants, or NGOs.

Subsequent office analyses will integrate the data acquired in the field and laboratory with those already in the project database. These analyses will generate a baseline description of the hydrology of the study area. Potential impacts on hydrology and water quality then will be assessed, and appropriate mitigation and monitoring plans will be developed.

#### **4.2.2 Biological Environment**

A description of the biological environment in the project area will include available information on:

- Terrestrial vegetation (phytogeography, forestry resources, threatened or endangered species, exotic and invasive plants)
- Terrestrial wildlife (diversity; habitat associations, preferences, specific use patterns; threatened or endangered species; game species; daily and seasonal movement patterns)
- Freshwater biota (aquatic habitat and faunal associations, sensitivity)
- Resource utilization (freshwater fisheries and aquaculture, agricultural production, livestock production and animal husbandry, ethnobotany, forest concessions and logging operations, hunting, poaching)
- Special areas (reserves, parks, protected areas, biologically sensitive habitats)

Field data collection on the biological environment will focus on those identified habitats with the potential for longer-term impact from project construction and operation.

Field surveys will focus on mitigation planning by providing information on the types of vegetation altered and conservation values affected by project construction. Information collected during field surveys will serve as a basis for revegetation efforts following construction and operation. In addition to botanical surveys in these areas, villagers will be

interviewed to obtain information on potential weed problems and local use of vegetation, including timber and traditional or medicinal plants.

Wildlife studies will focus on describing specific wildlife associations in each of the representative habitats and concentrate on resources that may be affected most by project construction or operation.

Interviews will be conducted with local residents to gather information on particular habitats, migration patterns of wildlife and species exploited, methods used, and income generated from these activities (e.g., hunting/poaching, livestock).

Biological field investigations will be conducted during only one season. Information from governments, NGOs, communities, and in-country biological specialists will be used to supplement field observations and extrapolate the potential impacts of project construction and operations on these representative habitats during other seasons.

#### **4.2.3 Human Environment**

A description of the human environment will include available information within the project area on:

- Socioeconomics (employment and labor, income distribution, demography, land use, land tenure, and settlement patterns)
- Infrastructure (goods and community services, institutional framework, transportation, recreation, public health, education)
- Archaeological and historically significant sites
- Transhumant corridors
- Sociocultural issues (heritage, religion, traditions, traditional tribal lands, social stratification, attitudes toward project)
- Health situation analysis and mapping

This information will then be used to:

- Broadly profile the cultural characteristics of people in the project area
- Identify land uses and resource conflicts
- Describe existing and future economic pressures
- Predict potential human impacts and socioeconomic changes arising from the development

The purpose of the socioeconomic field effort is to identify direct and indirect economic benefits and to recognize unavoidable impacts resulting from project development which will require significant planning, time, and resources to mitigate. Mitigation plans which will integrate the project into the existing environmental and socioeconomic context of

Cameroon, given other social and physical constraints, then can be developed using OPIC and World Bank guidelines and extensive rural development literature available. To achieve these objectives, field investigations will focus on providing detailed socioeconomic information for those areas subject to long-term impacts such as the production area locations. Specific tasks to be undertaken in this field effort include:

- Informal fact-finding missions with government and NGOs, community-based organizations, and local consultants to determine the current socioeconomic issues and data sources as they relate to the project;
- Identification of significant villages within the project area to visit for socioeconomic input;
- Socioeconomic baseline description based on experts' knowledge and published data;
- Development and implementation of a project specific, rapid rural assessment; and
- Meetings with appropriate local government, NGOs, and/or village representatives of directly affected people to discuss potential impacts and mitigation plans.

#### **4.3 TASK 3: LEGISLATIVE AND REGULATORY CONSIDERATIONS**

International, regional, and local treaties, laws, regulations, and standards dealing with environmental quality, health and safety, protection of sensitive areas, endangered species, facilities siting, lease/exploration license/concession agreements, and land use control will be identified and evaluated for construction, operating, and decommissioning phases of the project under this task.

OPIC and World Bank guidelines (a general listing of legislative regulatory considerations are provided in Appendix A) and government legislation relating to water resources, mineral resources development, and industrial facilities will be addressed, together with the health and safety requirements specific to the proposed activities. Relevant World Bank and Cameroonian regulations dealing with forest operations, wildlife, cultural resources, land tenure, etc. will be addressed for the proposed activities.

#### **4.4 TASK 4: DETERMINATION OF THE POTENTIAL IMPACTS OF THE PROPOSED PROJECT**

In this task the EIA consultant will identify significant changes to baseline environmental conditions likely to occur as a result of the construction, operation, or decommissioning of the proposed project. To the extent required, a determination will be made as to whether impacts are: beneficial or adverse; avoidable or unavoidable; significant or insignificant; direct, indirect, or cumulative, certain, likely, or unknown; construction, operation or decommission induced; short-term or long-term in nature. Potential impacts of accidental upset events also will be addressed under this task. Where possible, impacts will be described quantitatively in terms of environmental costs and benefits. A discussion also will be presented which identifies data limitations and uncertainties associated with the prediction of impacts.

The EIA will identify and address short term, medium term, and long term, reversible, and irreversible impacts.

Impacts addressed will include, at a minimum, the following issues:

- Air and water quality
- Avoidance and management of protected areas (wildlands, wetlands)
- Biological diversity
- Cultural properties
- Economic benefits
- Indigenous peoples
- Induced development
- Industrial hazards
- Land use, tenure and settlement
- Noise
- Occupational health and safety
- Waste management
- Cumulative effects

#### **4.5 TASK 5: ANALYSIS OF ALTERNATIVES**

The EIA will include an analysis of alternatives to meet the ultimate project objectives. A “no action” alternative will be considered to compare/assess continued activities in the region with the proposed project and without the proposed project. The EIA will describe how the alternatives compare in terms of potential environmental and human impacts, suitability under local conditions (i.e., skill requirements, level of technology) and reliability, and monitoring requirements. To the extent possible the costs and benefits of each viable project alternative will be evaluated. Alternatives discussed may include design approaches or construction procedures that are more sound from an environmental, economic, or sociocultural viewpoint than the project as proposed. The EIA will discuss the process by which alternatives were selected for analysis and provide a list of other alternatives considered and rejected, along with reasons for these decisions.

#### **4.6 TASK 6: DEVELOPMENT OF MANAGEMENT PLAN(S) TO MITIGATE ADVERSE IMPACTS**

Mitigation measures and project design features will be recommended to avoid significant adverse project impacts or to reduce them to acceptable levels. General measures identified by OPIC, the World Bank (for mining development), as well as industry experience from Geovic and their consultants will be used to guide EIA mitigation recommendations.

If standard mitigation measures cannot be identified or implemented to avoid or reduce project impacts on site, alternatives to compensate for unavoidable losses due to the project will be considered.

Environmental management plans will be developed to address construction, operations, maintenance, and decommissioning activities and will include proposed work programs, cost estimates, staffing and training requirements, and other necessary support services to implement mitigation measures. The management plans also will include measures to minimize the potential for accidental, adverse impacts and will specify emergency response requirements.

An emergency Plan will be developed to address emergency situations such as accidents and landslides.

#### **4.7 TASK 7: ASSESSMENT OF COUNTRY CAPACITY TO IMPLEMENT EIA RECOMMENDATIONS**

The EIA will include a review of the capacity and capability of Cameroon's ministries, private industries, and NGOs to implement mitigation and monitoring of potential impacts resulting from the project. Where appropriate, recommendations to increase the country's capacity to meet project needs will be made. Recommendations may extend to management procedures and training, staffing, operation and maintenance training, budgeting, and/or financial support.

#### **4.8 TASK 8: DEVELOPMENT OF AN ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN**

A plan to monitor the implementation of mitigation measures and the impacts of the project will be developed under this task. An estimate of capital and operating costs to implement the plan will be provided together with a description of other inputs such as training and country capacity building needed to conduct it.

#### **4.9 TASK 9: ASSIST IN INTER-AGENCY COORDINATION AND PUBLIC/NGO PARTICIPATION**

The environmental consultant will assist in coordinating the EIA with government agencies and in obtaining the views of local NGOs and affected groups. Efforts to identify international, regional, and local NGOs that may have an interest in the proposed project and their particular areas of concern have been initiated. The opinions expressed by these NGOs and other interested parties and affected groups will be documented in and appended to the EIA. Consultation methods used will include individual or group meetings with government and NGOs and rapid rural assessments. Issues identified and concerns expressed during this process will be addressed in the EIA. The contents of the EIA will be made available to the affected groups during the public review period.

#### **4.10 TASK 10: REPORT PREPARATION**

The EIA will be concise and limited to significant environmental issues. The text, which will be written in English and French, will focus on findings, conclusions, and

recommended actions supported by data summaries and a list of references used in interpreting data and justifying conclusions. Any detailed analyses, interviews of interested groups and affected parties, and unpublished reference documents, referred to in the EIA will be presented in appendices and/or separate volume(s). The EIA will contain a comprehensive, stand alone summary document. The EIA will be in a format such that the following information is addressed and easily accessible.

- Policy, Legal and Administrative Framework
- Description of the Proposed Project
- Description of the Environment
- Significant Environmental Impacts
- Analysis of Alternatives
- Mitigation Plan(s)
- Environmental Management and Training Plans
- Monitoring Plan(s)
- Inter-Agency and Public/NGO Consultations
- List of References

## APPENDIX A

### REGULATIONS AND GUIDELINE CONSIDERATIONS

#### REGULATIONS AND GUIDELINES

The EIA must evaluate the project's compliance with appropriate World Bank guidelines, including:

- Environmental Assessment Sourcebook (1991a) and Updates (1993; 1994)
- Operational Directive 4.01 (Environmental Assessment) (1991b)
- Operational Directive 4.20 (Indigenous Peoples) (1991c)
- Operational Policy Note 11.02 (Wildlands) (1986)<sup>1</sup>
- Technical Paper No.55 (Techniques for Assessing Industrial Hazards: A Manual) (1988a)
- The Forest Sector: A World Bank Policy Paper (1991d, updated October 2002)
- Environmental Analysis and Review of Projects (IFC, 1993)

World Bank policy requires that projects must be consistent with all relevant World Bank environmental and occupational health and safety guidelines. These guidelines address topics such as liquid effluents, ambient air, and stack emissions. Environmental guidelines specific to mining are also provided by the World Bank. These guidelines relate to design, instruction and operation of the project.

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<sup>1</sup>Superseded by Operational Policy 4.04 (Natural Habitats) (1995b)

#### **World Bank Forest Policy**

All relevant projects financed by the World Bank must conform to the spirit and intent of the World Bank Forest Policy Paper (World Bank, 1991d, update October 2002) and adhere to its principles. The Bank will finance sponsors who commit to follow World Bank guidelines and internationally accepted practices aimed at preserving existing primary tropical forests. The World Bank will finance the reforestation of degraded land in connection with industrial projects and will encourage the optimal use of wood resources by supporting secondary industries where the raw material is a waste product of other industrial operations.

The World Bank has two policies directly relevant to biological diversity: presentation of endangered species and critical habitats, and conservation and management of wildlands. The Bank's wildlands strategy includes the preservation of sufficient amounts of representative wildlands and protecting or managing them to sustain their viability as plant and animal habitat.

#### **World Bank Policy on Social Issues**

Development projects are intended to modify social and natural environments to create or enhance economic, health, educational, and other benefits that are valued by society. Chapter 3 of the *World Bank Environmental Sourcebook* (1991a; see *Social and Cultural issues in Environmental Review*, pp. 107-136) makes it clear that the social analysis of a project is not expected to be a complete sociological study nor a social cost/benefit analysis of the project. It should, however, identify social changes, evaluate the social costs of long-term operation of the project, and formulate strategies to achieve desired regional objectives.

As opposed to a purely financial analysis, an economic analysis measures a project's effect on the efficiency and development of the affected regional economy. The Bank, however, understands the difficulty of measuring environmental impacts of a project in environmental terms and subsequently valuing these impacts in monetary terms. The main purpose of an economic analysis is to ascertain whether the project can be expected to create more net benefits than any other mutually exclusive option, including a "no project" alternative.

Incorporation of the effects of environmental degradation into public decision making is an essential step toward achieving economically efficient management of natural resources. An economic analysis of projects and policies can help make investments of scarce resources that contribute most to overall regional objectives.

#### **World Bank Policy on Community Involvement**

The World Bank expects the borrower to consider the views of affected groups and local NGOs in project design and implementation and in the preparation of EAs. The primary objective of consultation is to identify the issues and concerns of affected groups and interested parties.

#### **World Bank Policy on Air Quality**

The World Bank has established air quality guidelines for governing both stack emissions and dispersed ground-level pollutant concentrations associated with various types of industrial developments; these guidelines vary according to the type of industrial development under consideration.

**World Bank Policy on Water and Effluent Quality**

The World Bank has established liquid effluent guidelines for process wastewater, domestic sewage, and contaminated storm-water.