In Nigeria, up to now mining activities have systematically escaped environmental control. In 1989, the Government of Nigeria issue the Document “National Policy on the Environment”, which was revised in 1999 in response to the advances in knowledge and the need of integrating development issues concerning all sectors of the economy. The new environmental policy goals followed the sustained development principles of conserving and using natural resources for the benefit of present and future generations, and ensure an adequate environmental quality for good health and well being of the population.

Recognizing the sectoral potential to cause serious environmental degradation, strategies regarding the implementation of policy directives in mining development included mandatory preventive EIA, minimization of environmental damages and risks, prescription of regulation and standards specific for mining wastes, and promotion of legal small-scale mining activities. None of them has yet been fully put into practice. Although the EIA Decree has been in force since 1992, only a year ago a mining project has prepared an EIA study and applied for an environmental certificate. Development of environmental regulations, mining effluent and waste management standards have just been included as an activity of the SMMR Project, following the provisions of the Nigerian Minerals and Mining Law recently approved (February 2007).

1. LEGAL FRAMEWORK

1.1 Environmental Management

The legal framework for environmental management in the country comprises the EIA Decree issued in 1992 and a set of standards for effluent and gaseous emission limitation, and industrial pollution abatement, complemented by a number of environmental
The Urban and Regional Planning Law (1992) contains additional provisions for EIA of urban development plans.

The Environmental Impact Assessment Decree (Nº 86 of 1992) includes a series of EIA good practice dispositions. It determines that EIA should be required for all public and private projects likely to affect the environment, presenting the list of mandatory study activities, providing for the submission of other proposals also deserving a detailed assessment, and exempting projects declared of national emergency. The text provides for information to, and consultation with state and local government authorities before decision-making, establishing places and timing for public consultation, and deadlines for the reception of opinions from interested parties and citizens. Mechanisms for EIA review included review panels, public reviews and mediation, to be chosen by the agency depending on the public concerns about the environmental effects of the project.

The agency responsible for conducting the EIA process (at that time the Federal Environmental Protection Agency – FEPA, and after 1999 the Ministry of Environment) was given the competence to issue EIA guidelines and procedures, and propose to the President approval additional lists of projects or class of projects for which an EIA should or should not be required. Sanctions for non-compliance with the decree determinations were also established.

Mining activities comprised in the EIA study mandatory list are: (i) mining of materials in new areas where the mining lease covers a total area in excess of 250 ha; (ii) ore processing, including concentrating for aluminium, copper, gold or tantalum; (iii) sand dredging involving an area of 50 ha or more; and (iv) quarrying of aggregate, limestone, silica, quartzite, sandstone marble and decorative building stone within 3 km of any existing residential, commercial or industrial areas.

In 1995, FEPA published a series of guidelines regarding the EIA process implementation:

③ Procedural Guidelines, detailing the different steps of the EIA process. Criteria for project screening were developed, extending the categorization of projects for mandatory EIA, establishing a list of environmental sensitive areas, and creating two other project categories: category II (projects with easily identified impacts and mitigation measures, that require only a partial EIA) and category III (projects with no negative environmental impacts, for which the agency do not require any additional study for issuing an environmental impact statement). Category II project list includes “any form of quarrying or mining”.

③ EIA sectoral Guidelines, comprising four manuals with directives for the preparation of impact assessment studies and reports for projects on the following classes: agriculture and rural development; infrastructures; manufacturing industries; mining of solid minerals and beneficiation and metallurgical processes. The manuals are sector-specific, focusing on the contents of EIA studies and detailing the information to be provided (projects characteristics, environmental resources, socio-economic factors and impact analysis); likely negative impacts of every class of project are pre-identified, and general measures for dealing with them are suggested, under the
The Nigerian Urban and Regional Planning Law was issued in 1992, establishing the principles, levels and procedures for physical planning in the country, and determining the government authorities of the three government levels responsible for overseeing its implementation. Its dispositions contain procedures for the submission of land development plans to be approved by the respective state Development Control Department, and requirements for the submission of a detailed environmental impact statement in case of residential development permit application in land in excess of two hectares.

Environmental standards were established in 1991, comprising three comprehensive guidelines, which include dispositions on penalties and fines for non-compliance. They are:

③ Standards for environmental pollution control in Nigeria, with water quality standards for industrial water intake, and effluent limitation in terms of toxicity levels; interim gaseous emissions from stationary sources, ambient air quality and noise levels are also determine;

③ Environmental Protection – Effluent Limitation (S.I.8) and Pollution Abatement In Industries and Facilities Generation Wastes (S.I.9), requiring the installation of pollution control equipment, and determining effluent treatment levels, restriction for the release of pollutants to the environment, and monitoring activities.

③ Environmental Protection – Management of Solid and Hazardous Wastes (S.I.15), designating toxic and extremely dangerous wastes, and establishing a system to monitor, sampling, handling and record keeping of designated substances.

These regulations comprise standards for several parameters related with wastewater, gaseous emissions and solid wastes generated by mining and metallurgy.

Guidelines on environmental management are competed by two other ones issued by FEPA in 1999 on environmental management system and environmental audit.

## 1.2 Environmental Aspects of Mining Development Legislation

In February 2007, the Senate of Nigeria approved the Nigerian Minerals and Mining Bill, repealing the Minerals and Mining Act of 1999. The purpose of the Bill has been the regulation of all aspects of exploration and exploitation of solid minerals and water in the country, including environmental issues related to mining activities. Distributed in six chapters and 165 sections, its dispositions comprise organizational measures within the Ministry of Solid Minerals Development (MSMD), regulations for granting mineral titles and leases, rules for the purchase of minerals, rights of host communities, offences and penalties. Responsibility of approving regulations necessary for implementing the Bill has been ascribed to the Minister of MSMD.
The mandate and functions of the created Mines Environmental Compliance Department within the MSMD organization, and the State Mineral Resource and Environmental Management Committees are described in section 2.2; other relevant sections on the environmental considerations, spread in several chapters, can be summarized as follows:

① The Minister is given power to establish environmental procedures and requirements applicable to mining operations;

② Mineral titles take one of the following forms: Reconnaissance Permit, Exploration License, Small-scale Mining License, Mining Lease, Quarry Lease and Water Use Permits (granting of water use permits for industrial and commercial use have been under the responsibility on MSMD since 1946) 1.

③ Holders of one of the mentioned titles have a series of obligations for performing mining activities “in an environmentally and socially responsible manner”, such as: maintain and restore mining land in safe state from disturbance and in compliance with applicable environmental laws and regulations; discharge water or effluents in compliance with water use permits and regulations; and not explore forest reserve except with the approval of the Minister or in compliance with regulations;

④ Before commencing any development work or extraction, holders of mining leases have to submit to the Mines Environmental Compliance Department all EIA studies and mitigation plans required under environmental laws and regulations;

⑤ Every holder of a mineral title shall: minimize, manage and mitigate any environmental impact from his activities; and rehabilitate and reclaim disturbed mining land to its natural state or to such state as specified in the pertinent regulations;

⑥ Every holder of a mining title shall present to the Mines Environmental Compliance Department an environmental impact statement approved by the Federal Minister of the environment, and the correspondent environmental protection and rehabilitation program, in respect of his exploration or mining operation;

⑦ The environmental protection and rehabilitation program shall provide for specific actions, inspections and annual reports, together with the estimate of costs and timetable for the efficient rehabilitation and reclamation of the mineral title area.

⑧ An Environmental Protection and Rehabilitation Fund shall be established by the Minister, for the purpose of guaranteeing the environmental obligations of holders of mineral titles. Provisions are given to the management and operation of the fund.

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1 Water Basin Committees under the Ministry of Agriculture and Water Resources are concerned with river basin management, drainage, as well as construction of small dam and water intake structures for community water usage in agriculture, cattle raising and domestic supply).
In the chapter on small-scale mining, provisions are given to the minimum and maximum sizes of mining titles, and the obligation of leaseholders to rehabilitate mined out areas and pay rehabilitation feed. The emphasis, however, is given to the supply by the Ministry, through the Small Scale and Artisanal Mining Department, of extension services to registered mining cooperatives of artisanal and small-scale miners, such as: prospecting and exploration services, mineral testing and reserve evaluation, feasibility studies, environmental assessment reports, training, equipment, as well as the introduction of health and safety procedures.

2. ORGANIZATIONAL ISSUES

Departments and institutions in federal government have lately been through a series of reorganization arrangements, not yet fully implemented, involving both the Ministries of Environment and Solid Mineral Development (MSMD). Institutional reforms seem far from being completed, and elections in April 2007 will certainly bring political changes and new policy directives to government organizations. Anyway, civil servants in key positions believe that recent changes in the institutional organization of both ministries must go through no more than little alteration.

2.1 Ministry of Environment, Housing and Urban Development

The Ministry of Environment, created in 1999, was originally structured in seven departments: Administration, Finance and Accounts, Erosion, Flood Control and Coastal Zone Management, Drought and Desertification, Forestry; Pollution Control and Environmental Assessment; three Special Units and three parastatals completed the ministry structure. Recent government decision led to the incorporation of housing and urban development departments to the ministry. The proposed structure for the new Ministry of Environment, Housing and Urban Development, still being designed by a government commission, anticipates three technical departments concerning environmental matters, one of them resulting from the merge of Environmental Assessment Department with the Pollution Control Department, both directly involved in the environmental management of development activities.

Three divisions carry out the Environmental Assessment Department mandate:

1. The Environmental Impact Assessment Division, in charge of conducting the EIA process, comprising the register and administrative procedures of EIA applications, EIA scoping, screening and review, and monitoring and follow up of project implementation. The department staff, divided in three branches, is composed of 18 professionals covering the disciplines of chemistry, forestry, geography, civil engineering and biology, only eight of them directly involved in conducting the EIA process. Computers are old and insufficient in number, and the division does not

2 Other proposed environmental departments of the new ministry are: Forest and Desertification; and Erosion and Coastal Zone Management.
dispose of service vehicles; site visits and inspections are made by public transportation or, when necessary, under the expenses of project proponents.³

³ The Standards and Monitoring Division, mainly dedicated to the certification and accreditation of environmental laboratories, and management of three laboratories, situated in Lagos, Kano and Rivers. Operational capacity of these three laboratories for performing air, water or soil analysis has been very limited; with personnel kept at a minimum (two officers in Kano and Rivers, five in Lagos); buildings need general improvement and all available equipment and instruments are considered obsolete; electricity supply is lacking. The laboratory in Lagos has been rehabilitated with the support of the World Bank, through the Local Empowerment and Environmental Management Project (LEEMP), but shortage of budget and personnel after repair may jeopardize future lab operations.

³ Oil and Gas Division, responsible for formulating environmental control policies concerning oil and gas development. Its duties, performed by six professional, include monitoring of more than ten oil service companies that operate in Nigeria (storage facilities, pipelines, petrol stations, drilling and waste disposal), and enforcing compliance with EIA recommendations. The division cooperates with the National Oil Spill Detection and Response Agency (NOSDRA), another parastatal under the Ministry, identifying spills, reporting accidents and emitting certifications after cleaning and site rehabilitation.

The mandate of the Pollution Control Department include the promotion of waste management technology, chemicals management and monitoring of hazardous toxic substances, and enforcement of industrial compliance with environmental standards and regulations. Accreditation of environmental consultants is an additional responsibility, so far reuniting around 180 registered environmental professionals.

³ The Solid Waste and Management and Technology Division has developed a number of programs. The most important are: the Municipal Solid Waste Management, a survey of the waste management problems, completed for five of the eighteen most problematic cities of the country; the Community Based Pilot Municipal Solid Waste Management Scheme, a program still depending of financial resources to be fully implemented; and the Solid Waste Management Program for the Federal Capital Territory, involving construction, supply, commissioning, operation and maintenance of the Solid Waste Bailing Centre in Abuja.

³ Chemical Management is developed through three programs concerning the inventory of Dioxins and Furans, and actions to implement related international agreements, such as the Stockholm Convention on persistent organic pollutants (inventories and information exchange networking).

³ Another department unit, the Marine Environment Pollution Control Branch, in addition to support to the solid waste management programs, has been in charge of

³ The analysis of EIA division performance is presented in section 3.1.
implementing the relevant international conventions and treaties regarding coastal ecosystems. Development of technology for cleaning-up and remediation of sites contaminated with chemicals, although part of the branch duties, has been limited to the development of remediation cost analysis studies. Compliance monitoring of polluting industries in coastal areas, another duty, has been limited to dialogue and negotiations with the local partners (state agencies and factory owner) for offering solutions to pollution problems. Joint compliance and enforcement inspections have been limited to a few port reception facilities.

3. The Sewage and Air Emission Management Division is the unit in charge of implementing all pollution control regulations, and enforcing corrective measures concerning environmental pollution abatement. Responsibilities range from rising awareness on pollution and developing indigenous expertise in industrial pollution and vehicular emissions control, to the monitoring of effluent treatment plants, ambient air and water quality. On account of the lack of personnel, equipment and funds, however, very little is actually implemented. No pollution control strategy and priorities have been defined. No data banks on environmental quality nor inventory on industrial pollution sources have yet been developed: there is only one stationary air monitoring station in Lagos for measuring CO₂, SOₓ, particulates, NOₓ and hydrocarbon, in bad conditions and with uncertain electric energy supply. A proposal for the installation of air monitoring networks in the six most industrializes cities (Jos, Kano, Lagos, Yola, Maiduguri and Sokoto) has not been implemented owing to financial constraints. There is no water quality monitoring. Although an official report states that some effort has been made to ensure industrial compliance (Federal Ministry for Environment, 2006), key officers at the department have recognized that not much inspection has been done, and the department has been unable to enforce industrial pollution regulations in an expected way.

Mining inspection and site decontamination and reclamation have not been considered in any of these divisions actions programs.

The Pollution Control Department has a very limited staff at the central and field offices, with nine professionals in Abuja offices, of which only three in the Sewage and Air Emission Management Division. Shortage of funds for program implementation has been a major constraint: zero capital budgets have incapacitated the department from executing its main duties. Vehicles and vessels for marine pollution monitoring are not available and deficient information on recent advances on pollution control technologies have also limited the department performance.

The ministry organization also comprises a Special Unit, the Planning and Statistics Department, in charge of action planning and coordination. Strategic plans are prepared in top management meetings with basis on environmental policy directives formulated by the Minister. Annual action plans and budgets, arranged from the activities proposed by the line departments, have been the main instruments to promote action coordination among them; results however have been poor, with departments and divisions tending to work isolated. One of the reasons for the inadequate action coordination may be the cultural tendency observed in key officers to protect personal work.
An attempt to change this tendency and improve action coordination has been the creation of an environmental information system, which would serve as a basis for a better understanding of the national state of the environment and for the identification of priority problems. It would also facilitate the adoption of an integrated approach to environmental management, and the collection and diffusion of statistics and other environmental data produced in all departments. The first initiative has been a project, supported by the World Bank through LEEMP, for the installation of a geographic information system and the provision of a workstation and ten computers. The Planning and Statistics Department maintains a staff of twenty professionals, but is underprovided in appropriate computing facilities and training.

In November 2006, the Federal Executive Council of Nigeria approved the establishment of the National Environmental Standards and Regulations Enforcement Agency (NESREA) as a parastatal within the structure of the Ministry of Environment. The general mandate then attributed to NESREA has been the enforcement of environmental policies, laws and regulations. The reported reason for creating this agency was the need to surmount the financial and operational difficulties of implementing the environmental legislation through the regular departments of the Ministry of Environment. The new agency would be capable of hiring personal, find new sources of financing and income out of the government budgets, and work in cooperation with different stakeholders and other partners.

NESREA has not yet been fully implemented. In fact, the Executive Bill was forwarded to the National Assembly but not yet signed into a law. However, a proposal has been devised for the organogram of NASREA, comprising three line departments (planning and policy analysis, inspection and enforcement and environmental quality control), an administration and financial department, and six supporting offices (one of laboratory services corresponding to the three laboratories maintained by the Department of Environmental Assessment) (Figure 1). The proposal is still waiting to be discussed with the authorities, and has even motivated a communication by the Minister to all departments stating that no decision has been made on it. The directory board was appointed and already held a strategic planning meeting. Enforcement responsibilities of each proposed department have been listed, while almost all the functions and tasks detailed in the lists coincide with those of the Pollution Control Department. The idea is that after transferring enforcement activities and fieldwork to NESREA, the Pollution Control Department would concentrate in specific waste and chemical management projects, and develop pollution control information and technology in support of NESREA activities.

There are important issues regarding NESREA capacity building and future operation, all of them still uncertain. One of them is personnel. The directory board expects the transfer of a significant contingent of civil servants from the Ministry. Initially, agency staff at Abuja comprises forty professionals and ten support personnel. Staff at the six zonal offices of the Ministry, who should be engaged in fieldwork and inspections, would also be transferred to NESREA. Some of the zonal offices are overstaffed. In Lagos and Oyo, for instance, on account of the intensity of industrial activity (in Lagos) and forestry (in Oyo), counts over one hundred civil servants each. The zonal offices would be restructured, personnel trimmed and trained for effective and efficient work force (NESREA, 2007).
Other issue is the availability of resources for institutional building. NESREA is provisionally occupying space in the Department of Pollution Control, while waiting for definitive offices. Budget for 2007 would be sufficient only for office accommodations, initial staff salaries and overhead costs. The Federal Government will supposedly supply basic furniture e equipment for the definitive offices. As for resources to finance personnel training, equipment and logistics for future monitoring, inspections, and other enforcement activities, they still have to be found. NESREA directory board seems to rely on the association with development partners for devising and maintaining a specific environmental fund.

Discussions on the NESREA strategy for meeting with the challenge of efficiently enforcing regulations and reduce industrial pollution have just begun and still need to be developed towards a more realistic approach. The views of the Director General is that the agency main focus should be the promotion of voluntary compliance, through dialogue with stakeholders, and the strategy to achieve voluntary compliance would take account of identifying the main pollution sources (mapping of the main industries), and promoting pollution control best practices; persuasion and sensitization would be the main weapon. In those states that have environmental ministries or agencies, close collaboration with inspection and environmental surveillance state units would further the effectiveness of enforcement. The 1991 standards and environmental protection guidelines described above would be the legal instruments to be employed by NESREA to encourage compliance, pending their review and the production of new regulations.

2.2 Ministry of Solid Minerals Development

For the last two years, the Ministry of Solid Minerals Development (MSMD), created in 1995, has gone through an administrative reorganization motivated by the increasing demands for investment in the solid mineral sector and the acknowledged difficulties of the ministry to respond in terms of providing support services, such as geologic data and information, and transparent and efficient licensing procedures. Prevalence of illegal mining activities and the lack of instruments to prevent them were expressed in low revenue generation of the sector.

Together with significant staff reduction, the ministry reform resulted in four new technical departments, one of them for environmental protection activities), in order to stress the importance of technical proficiency development over administration activities (Figure 2): Mining Cadestre, Mines Inspectorate, Artisanal and Small-scale Mining and Mines Environmental Compliance.

The Nigerian Minerals and Mining Bill of 2007 endorsed the new technical departments. The minister is given six months to install the Mining Cadastre Department now transformed in a special office, an autarchy headed by a director general. The agency will be the sole responsible for the whole administration of mineral titles, maintaining registration of all applications, issued licenses and leases. The Mining Cadastre therefore is the exclusive authority and jurisdiction over the country, and shall operate from Abuja and zonal offices. The Mines Inspectorate Department is given the technical supervision of
mining and quarrying activities, including enforcement of holders with safety and health regulations and all other conditions of mineral titles. Inspections, revenue statistics reporting, and all investigation necessary to ensure mining development are also part of the department functions.

Artisanal and Small-scale Mining Department main objective is to assist small-scale miners on the organization of their activities, improving their skills, mining efficiency, production and income levels; and also solving conflicts and promoting friendly relationship between miners and local communities. The department has already been functioning with a staff of five professionals from the fields of chemistry, metallurgy and mining engineering, and fourteen people more in the zonal offices of MSMD, at least one professional in each zone. Up to now, department action has included developing procedures for registering groups of artisanal and small-scale miners in cooperatives, facilitating their access to financial aid, and supporting the legalization of their activities under the new law. The ongoing inventory of those groups is aimed at identifying and locating them throughout the country. In addition to the Inventory of Abandoned Mines and Quarries, a study in progress as part on the Sustainable Management of Mineral Resource Project, supported by the Bank, the department identified as a priority and has decided to include in the next MSMD action plan the development of baseline studies on Nigeria small-scale gold mining and gemstone exploitation.

Directly related to the environmental management of mining activities are the Mines Environmental Compliance Department and the Mineral Resources and Environmental Management Committees.

The Nigerian Minerals and Mining Bill of 2007 ascribes to the Mines Environmental Compliance Department the same objectives and functions defined during the MSMD reform: (i) review of plans, studies and reports related to the environmental control and obligations of mineral titles; (ii) enforcement of environmental regulations; (iii) promotion environmental audits and making of recommendation for correcting liabilities of mines; and (iv) liaison with other government agencies involved in mining operations, closure and reclamation of disturbed mining land.

The department has begun to be implemented in the beginning of 2006. Department staff originally comprised three members (the director and two senior professionals) who were joined in the beginning of April by three junior chemists. By the end of the MSMD reorganization phase, the final department staff is expected to be in office: 36 professionals in Abuja plus a still undefined number of inspectors to be transferred from the staff in the six zonal MSMD offices. Except for the head of the department, no staff members have any experience on environmental management. This will require a great effort in training and capacity building for the execution of the responsibilities assigned to the department. Other requirements would comprise office space, technical literature, maps and all support computing and transportation equipment.

The work universe of the department include around existing title holders of 400 mining enterprises and 2000 quarries, most of them operating with no environmental control. These activities will have to be inspected or audited, and compelled to comply with the
environmental standards. In addition, the department will have to deal with a number of new mining title applications every year, for which staff will provide support for the elaboration and review of environmental studies. So far, the department staff has been engaged in responding to complaints from the population on dust and noise from quarries and other mines exploited next or inside urbanized areas.

The Nigerian Minerals and Mining Bill of 2007 also sanctioned the recently created Mineral Resources and Environmental Management Committees that have been installed by MSMD in a number of states, as a medium for coordinating environmental protection policies with mining development, and resolving conflicts between miners and local communities. In time, such committees will be inaugurated in all 36 Nigerian states. Chaired by a representative of the Mines Compliance Department, each committee will be composed by seven more members, three from the Federal Government (ministries of Agriculture or Forestry, Environment, MSMD) three representatives from the respective state government (state ministry responsible for land use matters, Surveyor General, environmental department/agency), and one from the Government Council of the area considered by the committee.

Committees’ functions range from advising the Minister on issues affecting grants of mining titles, compensation for the use of land and land pollution and degradation, to the implementation of environmental protection measures and programs and assistance to the Minister in resolving conflicts among stakeholders (miners, state governments local councils, communities civil institutions). Meetings are scheduled to happen once every three months, and reports on every meeting have to be sent to the Minister. Costs for the operation of the committees (transportation of members, sitting allowances and entertainment) will be met by MSMD budget, and administrative support, provided by MSMD state offices.

3. EFFECTIVENESS ANALYSIS

3.1 EIA system in practice

In Nigeria, the EIA system has being implemented since 1995, when the mentioned set of sectoral EIA and procedural guideless were published. The EIA Division of the Environmental Assessment Department at the Ministry of Environmental, Housing and Urban Development is the main administrative unit responsible for conducting the EIA process, preparing documents and developing the procedures necessary for decision-making on project certification by the Minister. There is no other EIA system in operation at the federal level in the country. In accordance with the EIA regulations, all public and private projects likely to negatively affect the environment must be submitted to the EIA process conducted by the Ministry of Environment, including oil and gas production activities. The Petroleum Act of 1991, which consolidated and reviewed previous enactments concerning hydrocarbons exploration and exploitation, do not contain any different disposition regarding environmental assessment obligations. The recent Nigerian Minerals and Mining Bill, although attributing co-responsibilities concerning the
review of EIA studies to the MSMD Mines Compliance Department, confirms the previous legislation for approving mining activities EIAs and environmental certificates.

At the state level, as mentioned in section 1.1, state departments in charge of planning and land development control may require, in their exclusive jurisdiction area, an EIA for urban development residential projects, in areas en excess of two hectares. Procedures in this case are exclusively under the responsibility of state authorities, and no overlapping or conflict has been reported between the two government levels on account of environmental assessment of projects.

The steps determined in the EIA Procedural Guidelines of 1995 have been regularly implemented, and can be summarized as follows:

③ Development of project proposal, and submission of application to the EIA Division, starting the EIA process;

③ Project screening: project site visit and initial environmental examination to assign the project into one of the three categories: I (full mandatory EIA), II (partial EIA) or III (no further environmental study required); the EIA division has ten working days for the initial examination and for informing the proponent of his project category;

③ Whenever and EIA is required, scoping exercise by the proponent to define the terms of reference, indicating the significant impacts and alternative to be addressed in the EIA study; a public hearing may be consulted at this point depending on the public interested in the project; terms of reference are discussed with the EIA Division staff who define the final scope of the required EIA;

③ Proponent (through a consultancy firm) undertake the EIA study according to the approved terms of reference, and proceed to consultation with stakeholders and affected communities, documenting consultation events and results, and in time presenting the draft EIA report to the division; six months is the average duration of this phase;

③ Review process: after receiving EIA report, the division undertakes an in-house review and determines one of the three forms of external review: (i) panel review, by a group of panelists chosen by the Permanent Secretary from the EIA consultants list registered in the Ministry; (ii) public review, comprising public display of EIA report for a period of at least 21 working days in sites accessible to interested parties, followed by a one or two-day sitting for discussion; information to the public is made by newspaper advertisement and invitations; (iii) mediation, foreseen in the decree but not yet put into practice, by mediators appointed by the minister; site visits may be necessary; the EIA review process, which should not last more than one month;

③ Elaboration and submission by the proponent of the final EIA report incorporating issues raised during the review process, and defining conditions of project implementation (monitoring, mitigation and follow-up programs, audit procedures etc.).
Decision-making, comprising the issuance of both an environmental impact statement, in a maximum delay of one month of the receipt of the final EIA report, and the respective certificate, by the environmental authority;

Project implementation: after certification, project implementation follow-up from site preparation to commissioning is made by the EIA division. Post commissioning inspections and follow-up are under the responsibility of the Pollution Control Division (to be at some point transferred to NESREA).

Project proponents pay for all costs involved in the EIA process, in the form of processing and certification fees: an initial processing fee of a fixed amount, and a final charge assessed by taking into account all process incurred expenses. The revenue generated from the EIA activities in 2006 amounted N$ 37,102,201:00 (around US$ 300,000).

EIA procedures in Nigeria are not different from those practiced in other countries, and could be considered adequate to ensure effectiveness and transparency in terms of information disclosure and public participation, as long as some minimal technical and political conditions would be met; these conditions include: (i) full compliance with EIA requirements by projects classified as “mandatory EIA study activities”; (ii) good quality EIA studies – which depend on availability of environmental data and information, adequate screening, and technical capacity of involved professionals for EIA scoping and review procedures; and (iii) efficient enforcement mechanisms during project implementation.

Although no systematic survey has been made on the level of project compliance with EIA requirements, common opinion at the EIA Division is that the majority of activities implemented in the country since 1995 have not been submitted to the EIA process. Mines and quarries, ports, airport, railway, housing and transportation projects have been kept away from the EIA legal requirements, as well as most public projects listed as mandatory EIA activities (infrastructure, transportation, ports, railways and housing). Only 25% of drainage and irrigation, water supply and waste treatment projects did comply. However, almost all food, brewery, beverage and tobacco processing, petroleum and major power generation projects did.

An indicator of the poor level of compliance is the number of registered and certified EIA projects. In 2002, a paper presented at the 20th IAIA Meeting scored a total of 139 projects submitted to the EIA process from 1995 to 2002 at the Ministry of Environment, of which 82 for oil and gas development, but none for mining activities (Dayo, F. et alii, 2002). In 2006, as at September 55 projects were certified and EIA approvals granted (Federal Ministry of Environment, 2006). Lack of political will, public awareness and adequate enforcement instruments may have caused this situation.

Factors influencing the quality of EIA studies are also adverse. As mentioned before, environmental data and information are still to be collected and organized; even data and information that have been generated by EIA studies have not been systematized. As
mentioned above, projects aiming at creating and operating an environmental information system have just begun to be implemented.

Screening procedures have been developed in the Procedural Guidelines with basis on the usual criteria of project impact potential and dimensions, and sensitiveness of affected area. Project impact potential and dimensions served for listing project types in EIA project category I, II and III; environmental sensitiveness of affected area determines the classification of a project in categories II or III in the immediately antecedent category. For instance, a small-scale irrigation and drainage project listed in category II, when located in or close to a mangrove swamp is classified in category I, thus requiring a full EIA. Project categorization is also supported by an initial environmental evaluation. In other EIA systems, this kind of screening approach works satisfactorily. Lists previously discussed with stakeholders may reduce opposition to the EIA system and sensitize project proponents to the importance of EIA. They also help to minimize discretion in decision on what project should have its environmental and social consequences discussed by a broader audience. In other countries, similar lists have been reviewed after a time to include project types that, based on the EIA process experience, have proved to deserve a detailed assessment, and exclude those of which potential negative impacts could be easily predicted, mitigated and monitored.

Improving the technical capacity of EIA Division staff in charge of conducting the EIA process is a crucial issue, since they are responsible for the levels of technical requirements expressed in the terms of reference to be met by consultants while formulation EIA studies. Consequently, they respond for the ultimate quality and relevance to decision-making of the generated impact information. The EIA guidelines issued in 1995 for a number of economic activities have been of aid to the EIA scoping activities, but are now clearly outdated. Inspired in the technical literature of the 1980s, these guidelines deserve a comprehensive technical review to benefit from the EIA methodological advances of the last two decades.

Professionals of the Environmental Assessment and other Ministry departments are aware of the urgent needs of updating technical information on EIA and environmental management. A common deficiency detected in the review of most EIA studies is the poor quantification and qualification of environmental impacts. Due to deficient information on the technical instruments available to improve the quality of impact prediction, EIA reviewers tend to accept poor impact analysis and oversimplified and inefficient mitigation measures.

The ongoing World Bank project “Translating Analysis into Environmental Action for Institutional Change” is carrying out the assessment of EIA training needs in Nigeria and two other African countries. The project will certainly identify the full Nigerian demand for the training of different EIA process actors in the various EIA subject matters. For specifically improving EIA studies, however, training on EIA advanced methods and impact prediction techniques is urgent and essential.

During project implementation, poor capacity for ensuring compliance with stipulated mitigation measures, monitoring and other recommendations has been another factor
threatening the EIA system effectiveness in Nigeria. The shortage of personnel and material resources have limited follow up inspections during project construction phase, and regular inspection after project commissioning. As mentioned above, no inspection plan have ever been formulated or implemented and overcharged staffs have to rely on public transportation for site visits and inspections, or require transportation support from project proponents. Although EIA processing costs are virtually reimbursed, revenues go directly to the Nigerian Federal Account, and it is not sure that any fraction of the paid amount come back to the Ministry for the benefit of the EIA and Pollution Control divisions. Project follow-up and environmental compliance situation regarding oil and gas development seems to be more favorable, as the Oil and Gas Division is reported to have monitored the majority of the 33 EIA approved projects inspected in 2006 (Federal Ministry of Environment, 2006).

A project on the review of EIA regulations has been developed as part of the Local Empowerment and Environmental Management Project (LEEMP). A Nigerian consulting firm has been hired to review EIA process main functions and procedures, giving a more holistic approach to the five existing sectoral guidelines, and formulating new guidelines for the assessment of dredging (inland and riverine) and waste management projects (solid, liquid, hazardous and toxic wastes, incineration, thermal “desorption” and land-filling). In the near future, draft guidelines will be the object of a series of thematic workshops for consultation with the main stakeholders. From the project terms of reference, it is not clear whether or not the reviewed and new guidelines will incorporate information on more effective EIA methods and impact prediction techniques.

Although government officers have expressed a different opinion, the Nigerian EIA Decree of 1992 may be considered an efficient piece of legislation that does not need any immediate review. The efforts needed to formulate, process and approve a new federal enactment on EIA would be better employed to the EIA system modernization and the improvement of specific regulations, such as: (i) review and expansion of project screening category lists; (ii) creation and adoption of modern self-control or self-monitoring schemes; (iii) development of criteria for EIA review; (iv) extension of public participation mechanisms; and (v) development of effective enforcement instruments and mechanisms (characterization of offences and updating of penalties and fines). The EIA Decree grants the Minister the power to propose to the approval of the President all kinds of regulation concerning EIA implementation.

Without government political will and stakeholder’s commitment, however, additional regulation, training, technical equipment and logistics would not be enough to ensure EIA effectiveness.

### 3.2 Nigerian Mineral and Mining Bill Environmental Considerations

After sanctioning the Nigerian Mineral and Mining Bill, the implementation of its purposes regarding the environmental control and management of mining activities will depend on the development and approval of specific regulations. For an effective implementation, the
improvement of institutional capacity and technical competence of both MSMD Mines Environmental Compliance Department and EIA Division.

Among the obligations assigned by the Bill to the MSMD Minister is the establishment of environmental procedures and requirements applicable to mining operations (Section 4.h); in case of issues related to environmental management and control of mining projects, this may be a source of competence conflict between the MSMD Minister and the Minister of Environment. The Sustainable Management of Mineral Resource Project, which includes activities for improving the legal framework and developing of good environmental practices within the mining sector, could certainly play a significant role in coordinating the elaboration of those regulations.

The establishment of environmental procedures and requirements for mining may signify an ample set of regulation documents, the formulation of which will probably be promoted by the Mines Environmental Compliance Department, in collaboration with the Ministry of Environment. After a rapid analysis of the Bill the following environmental management regulations and procedures have been identified:

1. Effluent, emission and waste disposal standards, for activities related to reconnaissance, exploitation and exploration of different types of solid minerals, quarries and mineral water;

2. Guidelines for environmental management systems, and environmental protection and rehabilitation programs;

3. Criteria for environmental monitoring and performance;

4. Environmental and social obligations to be met by mining activities allowed in mining leases.

5. Environmental criteria for tailings containment, and other solid waste and hazardous material managements, storage and disposal;

6. Criteria for abstraction, diversion and discharge water or effluent in watercourses;

7. Criteria for mining exploration in forested areas;

8. Guidelines for partial and full EIA, environmental audits and inspections;

9. Criteria and guidelines for mining closure and reclamation of mining land and abandoned mining sites;

10. Guidelines for small-scale and artisanal mining environmental management and approval, and rehabilitation and reclamation of small-scale mined out areas;

Apparently, the Bill does not provide for the approval of EIA studies or environmental certification as a condition to the issuance of a reconnaissance licenses, though license
holders are assigned the obligation of conducting their activities in “an environmentally and socially responsible manner”. As the Bill does not bring any definition of such an unclear expression, regulations should establish the respective environmental requirements.

A timing problem may be anticipated concerning the duration of the EIA process (from six to ten months in average) and the dispositions on the maximum delays assigned to the Mines Cadastre Office and the Minister to grant and issue a mining title (thirty days for reconnaissance and exploration licenses, 45 days for mining leases). This is an issue to be explored and solved during the elaboration of the mining EIA procedural regulations, in order to avoid situations such as the granting of an exploration license or a mining lease that afterward might proves to be economically unfeasible on account of unbearable costs of environmental mitigation or site rehabilitation.

Finally, regulations concerning the operations of the Environmental Protection and Rehabilitation Fund must be formulated and approved as soon as possible, to allow well-timed and effective impact mitigation and monitoring, and provide resources for the correct execution of rehabilitation and reclamation programs.

Mineral and Mining Bill implementation will bring a significant new work demand to the Mines Environmental Compliance Department, as will increase the EIA division work burden, not only owing to new mining development projects, but also due to the formulation of new regulation proposals and the legalization of existing mining enterprises. This work demand underlines the importance, for an effective mining environmental management, of providing adequate staff and work conditions to both administrative units. Additional support will also be necessary for the adequate training on environmental management of the current and future Mines Environmental Compliance Department staff.

**Approaches to address the problems of abandoned sites**

The only initiative regarding environmental problems and rehabilitation needs of abandoned mining sites has been the study “Inventory of Abandoned Mines and Quarries”, now in progress as part of the Sustainable Management of Mineral Resource Project. An interim report have been delivered in January 2007, presenting the main preliminary findings: 532 inventoried abandoned mines and quarry sites already identified; MSMD Mine Land Reclamation Unit assessed and its potential contributions to the reclamation of degrade mine land identified; criteria for the formulation of a remediation and land reclamation action plan; identification of forty critical and 22 high priority sites requiring urgent reclamation.

As costs of reclamation are prohibitive and out of the financial capacity of the federal, state and local governments, a short-term action plan has been elaborated proposing the adoption of temporary corrective measures (barricading of holes and contaminated areas, walls for containing land slides next to roads and buildings etc). Detailed engineering projects and cost estimates have been carried out on the 22 high priority sites, and bid documents prepared to assist the early commencement of reclamation works. Next step will be the identification of financing opportunities to further the implementation of those reclamation projects. A possible source would be the Ecological Fund, a financing mechanism
implemented by the Federal Government that disposes of 2% of the Federal Income to finance emergency environmental and social development projects. The majority of projects benefited by this fund have to do with granting resources to local governments for coping with emergency situations due to natural disasters, such as draughts and floods. Considering the emergency nature, the urgency and the potential social benefits of the 22 high priority reclamation projects, local governments would probably have little difficulty in getting financial aid from the Ecological Fund to implement them.
FIGURE 1
National Environmental Standards and Regulations Enforcement Agency (NESREA)
ORGANOGRAM
FIGURE 2

Ministry of Solid Minerals Development (MSMD)

ORGANOGRAM