

**Environmental Policies,
Mining and Structural Adjustment
in Guinea**

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Introduction

The manner in which the process of environmental degradation is conceptualized and its origins explained have obvious critical implications for the nature of the policy recommendations which will be put forward. Behind this general observation nestle a wide range of interconnected issues including the following: the relative importance accorded external and internal factors in their contribution to environmental degradation, which in fact is just one facet of the more general question of the conceptualisation of environmental questions with regard to the debates concerning economic growth and development ; the question of the role of the state in the development process and more generally the public versus private debate. Finally, this subject raises the question of the interplay between foreign and internal actors in the process of drawing up environmental and development policy - the whole issue of the reappropriation as opposed to the externalisation of the policy process.

My point of entry to these broad interrelated questions as they relate to Guinean environmental policies in the mining sector will be the role of the state and more specifically, the study of alternative conceptualizations of its role in the environmental policy process as revealed through the analysis of different planning documents.

An impressive number of studies have been undertaken on the environmental impacts of the bauxite -alumina -aluminium industry in various countries (Brazil, Jamaica, Australia and Canada, to mention just these) but apparently not in Guinea. This is significant for two reasons. First, because the environmental impacts of this mining

industry are considerable and second, because the bauxite-alumina sector has been by far the country's leading sector for the last thirty-five years.

The following table briefly summarizes the bauxite, alumina, aluminium production process.

Table 1
Bauxite, alumina, aluminium production¹

Activity	Product	Processes and inputs
Mining	Bauxite	De-bushing, removal of overburden Mining Washing, cycloning and filtering/drying
Refining of bauxite	Alumina	Drying of wet bauxite Crushing Digesting, thickening, washing, precipitation Calcination Inputs per ton of alumina : <ul style="list-style-type: none"> • 2.3 tons bauxite • 95 kg caustic soda • 92 kg fuel oil • 800 kWh electric power
Reduction and Smelting	Primary Aluminium	Reduction of alumina in electrolytic cells Casting of ingot Inputs per ton of aluminium : <ul style="list-style-type: none"> • 1.93 tons alumina • 370 kg coke • 15 to 30 kg fluorides • 116 kg pitch • 15 MWh electric power
Fabrication	Fabricated products	Hot and cold rolling (sheets and foils) Extrusion (extruded products) Rod and cables production Foundry (castings)

¹ United Nations Conference on Trade and Development, Environmental Aspects of Bauxite, Alumina and Aluminium Production in Brazil, UNCTAD COM 49, February 1995, p.13.

According to the study on the Brazilian industry from which this table is drawn, the main environmental problems associated with bauxite mining are related to the rehabilitation of mined-out areas and the disposal of tailings. Emissions of dust consisting of clay and bauxite particles from dryers' chimneys can also pose problems. In alumina production, the disposal of bauxite residue saturated with caustic soda ("red mud") is the main problem, although the emissions to the atmosphere of gases and particles from boilers, calcination furnaces and bauxite dryers may also be important. As we shall see, the emissions from the production of bauxite and alumina affect the soil, the air and the water. Although aluminium smelting is not undertaken in Guinea, it is useful to note that the emissions of fluorides from reduction cells and gases, smoke and steam resulting from pitch distillation are considered most important. Finally, in aluminium fabrication, emissions of gases and particles from smelting and re-heating of furnaces pose the largest problems.²

Bauxite and alumina production have been of critical importance to the post-independence Guinean economy. In fact, activities had already begun at several sites during the colonial period and, as is often overlooked, Pechiney's important activities were to continue even after President Sékou Touré's radical break with the French metropolitan power with the referendum of September 28, 1958. During the first

² Ibid.

Republic (1958-1984), three main sites were in operation, two of which produced and exported bauxite, and one alumina.³

Mining at Fria was initiated in 1957 by the French firm Pechiney Ugine. Production of alumina at this site began in 1960 and reached 460,000 tons in 1962 representing 58 per cent of the total value of Guinean exports. By 1963 the site was being operated by an international consortium, Fria Company (Frialco),⁴ which signed an agreement in February 1973 with the Government that created a joint venture, Friguia, in which the transnationals held 51 per cent of the shares and the Government 49 per cent.

Although the joint venture was exporting over 600,000 tons of alumina per year by the late 1970's, the company's output was uneven. Nonetheless, the local processing of bauxite to alumina at the Fria site from the early 1960's represented an interesting precedent, suggesting that one must go beyond an analysis of the absence of the factors of production, or interpretations of the 'political situation' during Touré's régime, as an explanation for non-transformation.

Production only began at Boké, the country's largest site, in 1973 some ten years after it had been agreed to form a mixed-capital venture, the Compagnie des Bauxites de Guinée, (CBG), in which 49 per cent of shares were held by the Government and the

³ For a detailed account of the development of this sector see Bonnie K. Campbell, Les enjeux de la bauxite. La Guinée face aux multinationales de l'aluminium, Presses de l'Université de Montréal and Institut Universitaire de Hautes Etudes Internationales de Genève, 1983, 182 pages.

⁴ Frialco's shares were mainly held by Olin Mathieson Chemical Corporation, United States (48.5%) and Pechiney Ugine, France (26.5%), with the rest being distributed among British Aluminium Company (10%), Aluminium Industrie AG, Switzerland (10%), and Vereingte Aluminium Werke AG, Germany (5%).

remaining 51 per cent by the international consortium known as Halco Mining.⁵ But Touré soon denounced the private firms for not respecting their agreement regarding local processing, because all output was exported as raw bauxite and purchased in proportions reflecting the shares of the private partners. Moreover, in 1974 it was announced that Alcan Aluminium Ltd., one of the foreign partners, was proceeding with the transformation of bauxite from the Boké site, not locally, as stipulated in the agreement signed with the Government, but in Ireland.⁶ The importance of the Boké site is illustrated by the fact that by the end of the 1970's it was producing close to 9 million tons of bauxite annually, all of which was exported in an unprocessed state.

The third bauxite mine of importance, that of Débélé in the Kindia region, was operated jointly by the Soviet Union and the Guinean Government. The agreement signed in November 1969 created the Office des Bauxites de Kindia (OBK), 100 per cent owned by the state. The Soviet Union constructed the mine and the railway, and was to be reimbursed by receiving 50 per cent of the ore extracted. A further 40 per cent was destined to the USSR according to the clauses of a long-term clearing agreement between the two countries. Production began in 1974, and exports of the raw mineral grew to between 2.7 and 3 million tons by 1990. Subsequently, in 1992 the firm was wound up, transformed into a limited liability company and renamed Société des Bauxites de Kindia (SBK).

⁵The ownership of the Halco Mining consortium was divided as follows: Alcan Aluminium Ltd, 27%; Aluminum Company of America, 27%; Harvey Aluminum Inc., 20%; Pechiney Ugine, 10%; Vereinigte Aluminium Werke AG, 10%; and Montecatini Edison, 6%.

⁶ An explanation for this unexpected pattern of relocation is provided in Chap. 4 of Les enjeux de la bauxite, op.cit.

If in the 1960's and 1970's Guinean mining policies had emphasized local transformation as a means to access to a greater share of earnings from this sector, this objective weakened during the next decade. The central policy thrust became the maintenance of a minimum level of revenue through the imposition of taxes on the export of bauxite and alumina. Here again, as suggested by the price negotiations of 1985-87, the results by the end of the 1980's were to prove disappointing, illustrating Guinea's asymmetrical integration into the highly oligopolistic structure of the international aluminium industry.⁷

From an economic standpoint, in spite of the country's enormous and potentially diversified wealth in mineral deposits, agriculture and hydro-electric power, by the end of the Sékou Touré period, Guinea remained extremely dependent on the bauxite-alumina sector which contributed at that time an estimated 25% of GDP, 95% of exports and 79% of tax revenue.⁸ Moreover, by the time of Touré's death in 1984, the country's general economic situation was extremely difficult. The infrastructure was worn down, mining activities enclaved, agricultural production had deteriorated, industries were poorly equipped and operating under capacity, the public sector was overstaffed and the system of education was unsuited to the needs of the country. In addition, the local currency had lost much of its value, and an estimated half of internal trade took place outside the formal market. Above all, a heavy burden of official debt (1,200 million US dollars) and arrears (200 million dollars) had been amassed which together represented approximately

⁷ For an analysis of the industry see chapters 1 and 2 in *Restructuring in Global Aluminium*, Bonnie Campbell and Magnus Ericsson (Editors), Mining Journal Books, London, 1996. Chapter 3 is on Guinea.

⁸ World Bank, *Republic of Guinea. Country Economic Memorandum*, Vol. 2 (Washington, DC, 16 November, 1990) Report No. 8774, p. 32.

the value of the country's gross domestic product.⁹ In a word, in spite of its enormous potential, the mining sector had been unable to forestall the process of indebtedness and the country was in desperate need for foreign exchange in order to undertake its programme of reform.

It was this context which provides the background for the introduction of the structural adjustment measures, resulting process of liberalisation and state withdrawal implemented by the government of President Lansana Conté to be discussed below. In turn, the orientation of these reforms was to be of critical importance for the nature of the new policies put forward in the area of environmental protection.

The Second Republic's environmental legislation was to be guided by a series of studies which underlined the urgency, the constraints and possibility of durable management of Guinean natural resources and of the environment more generally. Most central among the measures introduced was the Environmental Code of 1987 which was accompanied and subsequently completed by numerous decrees and codes.¹⁰

⁹ Guinea, Programme intérimaire de redressement national, 1985-1987 (Conakry , November 1985).

¹⁰ The September 1994 Plan National d'Action pour l'Environnement (PNAE) lists the following legislation;

- Already in existence:
 - Décret 89-199 codifiant les Etudes d'impact sur l'environnement
 - Arrêté d'application
 - Décret 89-200 portant régime juridique des installations classées
 - Arrêté sur les nomenclatures
 - Décret 89-201 portant préservation du milieu marin contre toutes formes de pollution
- Prepared but not implemented:
 - Décret sur le fonds de sauvegarde
 - Décret sur les taxes et redevances
 - Décret sur la protection des sols et du sous-sol
 - Décret sur les produits chimiques et les substances nocives et dangereuses
- Still to be prepared:
 - Décret sur la gestion des déchets
 - Décret sur la protection des eaux continentales
 - Décret sur les plans d'urgence
- Other dispositions and decrees concerned with the environment:
 - Code forestier

Preparation for the country's first Plan National d'Action Environnementale (PNAE) completed in December 1993, revealed the weaknesses of existing legislation which up to that time had dealt essentially with agriculture and forestry. The following initiatives were considered to have been particularly important in making the government aware of the situation and alerting it to the urgency, the constraints and opportunities in the area of sustainable management of Guinean natural resources and the environment more generally:

- Schéma National d'Aménagement du Territoire (SNAT)
- Lettre de Politique de Développement Agricole (LPDA)
- Plan d'Action Forestier Guinéen (PAFG)
- Programme d'Assainissement de l'Environnement Urbain de Conakry (PADEULAC)
- Projet d'Aménagement Intégré du Massif du Fouta Djallon
- Projet des Hauts Bassins Versants du Niger
- Projet de Gestion des Ressources Rurales (PGRR)¹¹

With respect to the mining sector, the 1993 PNAE raised the challenge of the costs and benefits of developing this critical area of activity, as one of the principal issues

Code de l'élevage
 Code de la pêche
 Code de la faune sauvage et réglementation de la chasse
 Code foncier et dominiat
 Code de la santé
 Code de l'eau (in process of being drawn up)
 Déclaration de politique de population (decree).
 Interestingly the 1994 PNAE does not include the Mining Code in this enumeration. The reasons for this may well have to do with the situation described in the fourth section of this paper.

¹¹ Republic of Guinea, Plan National d'Action pour l'Environnement, Conakry, December, 1993, p.13.

in environmental management. Guinea, the document noted, is fortunate to have good mining potential. However, continued the 1993 PNEA:

“the country’s landscape is scarred by large open cuts left by open-pit mining from which wastes are not sufficiently controlled and where the surfaces which have already been mined are not always been rehabilitated.”¹²

The challenge was defined as follows: “How can Guinea develop into a first rate mining operator capable of exploiting its potential, while at the same time taking into account the protection of its environment?”¹³ As will be seen, the 1993 PNAE dealt extensively with this issue.

However, with the increasing liberalisation of the Guinean economy, accompanied by the new incentives to attract foreign investment notably to the country’s vital mining sector, a new PNAE was put forward in 1994. This new document practically omitted any discussion of the mining sector, just as the new Mining Code put forward in 1995 had much less to say than the preceding one about the environment.

In confronting the difficulty of encouraging environmental protection while faced with the necessity of attempting to stimulate economic growth through the development of its rich mineral sector, the Guinean Government was to face a complex challenge but certainly not one that is unique to this country. As K. Andersen points out:

“Governments, regulators, and the citizens of mining communities face the challenge of designing and implementing public policies which will achieve a satisfactory balance between the total social benefits which can be derived from mining and the total

¹² Ibid. p.14.

¹³ Ibid.

social costs which arise from the degradation of human health, social stability, and the natural environment.”¹⁴

As the same author goes on to point out in her discussion of the criteria of the success in meeting the above challenge, there are two guiding principles. First, at a minimum, monitoring inspection and some system of enforcement will be necessary to ensure that the polluter pays. Second, there should be no intergenerational transfer of the costs, social or private, associated with the mine. As Andersen continues:

“...this is ultimately a political decision which will, again, require the judgment and wisdom on the part of designated leaders.”¹⁵

What is unique in the Guinean experience with environmental policies in the mining sector, is not only the country’s particularly asymmetrical form of integration into the globalised aluminium industry, but also the fact that this experience has taken place in the context of structural adjustment measures conceptualized for the most part, outside the country. These measures have been introduced since 1985 with the objective of stabilising the country’s finances and reforming the economy by addressing internal factors to the almost total neglect of external constraints.¹⁶ Consequently, the emphasis on domestic factors has meant increasingly heavy reliance on policies of deregulation, liberalisation, privatisation and state withdrawal. Over the adjustment period since 1985, this process has led to a reconceptualisation and reshaping of the functions of the state in general and as will be illustrated, to environmental policies in particular. Moreover, since

¹⁴ Kathleen Andersen, “Mining, privatization and the environment” in Journal of Mineral Policy, Business and Environment, Raw Materials Report, (Stockholm), vol.11, no.3, 1995, p.26.

¹⁵ Ibid.

1994, there appears to have taken place as well, a gradual externalisation of the planning process concerning natural resource policy. This raises two questions. Given the advanced nature of the process of state withdrawal from the developmental process and the growing influence of external forces and actors in the articulation of Guinean economic and environmental strategies:

1. In the present geo-political context, is Guinea in a position to assume the political decisions which, as suggested above, are a condition for reconciling economic development and environmental protection?
2. Is not the reappropriation of the conceptualisation and planning process over natural resource management a necessary political condition for long-term economic and social development and political stability?

While I do not pretend to propose answers to these questions, because of their importance, it seems useful to bring together elements which contribute to our understanding of the issues which they raise. To this end the paper is divided into the four following parts:

- I. Guinea's adjustment experience - the new framework for natural resource policy.
- II. Environmental impacts of mining in Guinea: the bauxite - alumina sector.
- III. Environmental legislation and the mining sector.
- IV. The bauxite - alumina sector and evolving environmental policies in the 1990's.

¹⁶ This argument is developed in Bonnie Campbell and Jennifer Clapp "Guinea's Economic Performance Under Adjustment: Importance of Mining and Agriculture", The Journal of Modern African Studies, Vol.33, No. 3, 1995, pp 425-449.

I. Guinea's adjustment experience - the new framework for natural resource policy.

If one considers Guinean reforms aimed at introducing a liberal economy, after an initial period of transition with the Programme intérimaire de redressement national (PIRN), the country's adjustment experience may be presented in three phases: 1986-1988; 1989-1991; 1991 to the present.¹⁷ With the first Structural Adjustment Programme (SAP) in 1986 began an initial phase aimed at liberalising and stabilising the economy which could be described as "standard adjustment". With the support of the World Bank, the country undertook monetary and banking reforms, the liberalisation of prices and trade, the stabilisation of public finances and the disengagement of the state from the productive sector. A new currency was introduced at parity with what had existed and then devalued 12-fold in real terms.¹⁸ Agricultural producer prices were liberalised, resulting in a quadrupling of most nominal prices. Many trade restrictions were lifted, and nearly all state-run agricultural import and export enterprises in Conakry were earmarked to be privatised.

During this first phase of liberalisation an important step was the introduction of a new Investment Code, passed in January 1987, which incorporated changes from a previous code which had been adopted hastily by the new government in October 1984. The 1984 Code had been introduced to encourage foreign and private investment. It provided for guarantees against nationalisation or expropriation without just and adequate compensation, and it provided for freedom to transfer and repatriate both capital and profits, in the currency originally invested. There were three categories of investment,

¹⁷ Republic of Guinea, PNAE, 1993, op.cit., pp.33-34.

¹⁸ These reforms are described in "Guinea's Economic Performance....", op.cit., p.433.

each benefiting from special investment terms, the categories being based on the size of investment, length of investment period and number of jobs created. Privileges for approved investments included import duty and tax exemptions for the period of investment set down in the Code. In addition, larger projects could negotiate additional benefits.¹⁹

In continuity with what existed, the 1987 Code was to systematise and extend the terms of the previous Code by welcoming foreign investment in all sectors except electricity, water, posts and telecommunications, arms and munitions. Tax relief was provided for investments in four areas and capital could be freely remitted. The sectors of priority were agriculture, agro-industry, forestry, fishing, transport and tourism. Special incentives were offered to small and medium firms (with an initial capital of 15-30 million Guinean francs, although foreign participation was limited to 49 %); non-traditional exports (excluding bauxite, gold, diamonds and iron ore); enterprises using more than 70% local inputs; and those outside Conakry. As before, applications for benefits were to be handled by the Commission Nationale des Investissements.²⁰

By mid-1988 a second SAP designed to deepen and consolidate the reforms was adopted with the expectation that the new measures would greatly improve the country's economic performance by addressing the "domestic policy inadequacies" of the previous regime. For reasons which have to do with a complex set of factors, both internal and external which have been analysed elsewhere, these more optimistic projections were not to be realised.²¹

¹⁹ The Economist Intelligence Unit, Guinea, Country Profile, 1986-87, p.25.

²⁰ The Economist Intelligence Unit, Guinea Country Profile, 1988-89, pp.30-31.

²¹ "Guinea's Economic Performance....", op.cit.

At the beginning of the second phase of adjustment (1989-91), a new set of economic targets was put forward : a real rate of growth of GDP of an annual average of 4.0%; an annual average improvement of 1.3% of GDP per capita; a reduction of the average rate of inflation by 1991 to approximately 18% and a reduction of the budget deficit to 5.5% (including grants).²² As elsewhere in Africa, this second phase - often referred to as the “ social dimensions “ phase of adjustment - was accompanied by the establishment of certain social objectives (primary health care, primary school education, etc.), certainly at least in part in recognition of the severe social impact of the former adjustment measures.

A third phase of adjustment as of 1991 was again accompanied by growth targets and stabilisation measures far more ambitious than were to be achieved. For example, the real growth rate was projected at 5% (4% in the rural areas), when in fact as a percentage of GNP it was to be closer to 1.3%.²³As will be seen, though very briefly in the last section of the paper, the external constraints in terms of falling revenues from the critically important bauxite/alumina sector were to become increasingly manifest as of this period. What is significant here is that it was during the third phase that a series of sectoral codes were to be promulgated and that the first national environmental action plan was to be introduced in 1993.

While it would be interesting to re-read the entire Guinean adjustment experience from a political standpoint and consider it as an eminently political process involving the redefinition of the role of the state and the ways in which those in power sought to

²² Republic of Guinea, PNAE 1993, op.cit., p.35.

reaffirm the basis of their legitimacy throughout this process, such a task is obviously beyond the scope of this paper. It is possible however, to gain a partial glimpse of these transformations by briefly examining the conceptualisation of the role of the state with regard to environmental policies contained in the major planning documents.

In reviewing the question of state restructuring, the 1993 PNAE notes that a number of important institutional changes had taken place since 1984 and that these could be linked to the restructuring of the Government and to the reform of the state sector and state services. The document identifies three main types of changes: institutional changes; decentralisation; the disengagement of the state.²⁴

- i) Institutional changes entailed the reorganisation under the same ministerial department of most of the agencies which had had the responsibility for the management of the rural sector and their reassembling under a single territorial agent (“direction préfectorale du développement rural et de l’environnement”). Similarly, units of strategic planning and regional coordination were established and new methods of work concerning intersectoral planning were to be experimented.
- ii) Concerning decentralisation, new programmes of rural development were to be carried out either at the prefectural or the regional level, or as part of sectoral national projects.
- iii) The progressive disengagement of the Administration’s services from their roles in production and technical management had already occurred. In certain areas however, such as the protection and management of the natural environment, the disengagement of the state was limited by the absence of private or community initiatives.

²³ Ibid.

As a result of these observations, the 1993 PNAE recommended that measures should be taken to bring awareness, involvement and advice to make decentralised communities more responsible for the management of their natural resources. As for the management of classified forests, it was suggested that this area ought to remain the responsibility of the Administration which should set up the appropriate services capable of intervening if necessary (“services forestiers d’intervention rattachés”).²⁵

Again with regard to the protection of the forests, the same document recommended in its section on Strategies:

“In the forestry sector, it is necessary to adapt the State to its new role, that of inciting, controlling, arbitrating and mobilising and to this end, there is need to create administrative structures, procedures and hiring civil servants whose joint efforts will ensure the greatest efficiency.”²⁶

Finally with regard to the different codes which Guinea adopted between 1986 and 1992, whether the Mining Code, “Code sur la protection et la mise en valeur de l’environnement,” the “Code Foncier et domanial”, or the proposed code to protect water, all of these, stipulated the 1993 PNAE, contain clear dispositions which seek to minimise hindrance of the environment:

“Measures which are preventive, just as measures which are corrective are prescribed by these different codes.”²⁷

In conclusion, in the context of adjustment measures which, as the 1993 PNAE itself recognised²⁸ sought the disengagement of the state from the areas of production and

²⁴ Ibid., p.87.

²⁵ Ibid.

²⁶ Ibid., p.92.

planning, it is striking to note the extent to which this document continued to recommend in the area of environmental protection, that the state not merely assume the functions of regulation, arbitration and mobilisation, but also those of monitoring, controlling and enforcement. As we shall see after reviewing environmental impacts in the mining sector, this more developmental conception of the state was to be short-lived.

²⁷ Ibid., p.147.

²⁸ Ibid., pp.182-183.

II.Environmental impacts of mining in Guinea : the bauxite / alumina sector.

Mining activities are of critical importance to the Guinean economy and the country has enormous potential in this sector.²⁹ Historically, the companies extracting bauxite and one transforming it to alumina were established in Basse Guinée, companies mining diamonds and gold in Haute Guinée and there existed as well numerous projects exploiting quarries for different ends. Mining of bauxite and iron ore has taken on greater importance geographically and in environmental terms with the creation of new companies which will operate in Moyenne, Haute and Guinée Forestière³⁰

According to the 1993 Plan National d'Action pour l'Environnement (PNAE), these activities have had a very considerable impact on the environment because they entail modifications not only of the landscape but because they cause severe pollution by rejecting wastes into the soil, the atmosphere and the water.³¹

a) The destruction of the soil

²⁹Apart from its enormous reserves of high grade bauxite, estimated at 20 billion tons, or one third of the world's highest grade deposits, which at present according to the World Bank represent approximately 40% of international trade of this material, it is estimated that Guinea's mineral reserves include the following :

Iron Ore	12 billion tons
Gold	500 tons
Diamonds	25 million carats
Nickel	73 million tons
Chalk	40 million tons
Graphite	11 000 tons

³⁰Concern for the impact of these activities is revealed by the increasing research in this area as for example:

Boubacar Camara : "Evaluation environnementale du projet d'exploitation minière du gisement de fer Pierre-Richard aux Monts-Nimba, Application des principes de l'Ecoperamide", Master's thesis in Environmental Sciences, Université du Québec à Montréal, 1994, 245 pages.

³¹Republic of Guinea. Plan National d'Action pour Environnement, Conakry, Decembre 1993, page 46.

Clearing and excavation work done with the help of bulldozers usually entails complete destruction of vegetation. This was confirmed to be the case in Guinea as a result of visits to various Guinean industrial sites undertaken by M.S. Diallo for research on this subject.³² This type of destruction not only modifies the landscape but threatens the fauna and causes physical destruction as a result of soil erosion. The major danger is that of the chemical degradation of the soils because nutritive elements have been washed away. This can cause loss of productivity to the detriment of agriculture and grazing.

One estimate suggests that the total surface area affected by the mining activities of the three companies present, from the time of their establishment to 1994 represented approximately 1118 hectares.

Table I

Surface area affected by the bauxite companies³³

Name of Company	Surface area in hectares
Société d'économie mixte Friguia	353
Société des bauxites de Kindia	750
Compagnies des bauxites de Guinée	<u>15</u>
Total	1118

According to this source, mining at CBG has been undertaken at five levels because of the considerable depth of the mine. The extensiveness of the surface covered

³²Mamadou Saliou Diallo, "Les instruments juridiques et le développement durable du secteur de la bauxite en Guinée". Master's thesis in Environmental Studies, Université du Québec à Montréal, October 1995, page 87. Much of the description of the physical impact of mining in this and the following two sub-sections is drawn from Chapter III of Diallo's excellent thesis.

³³Ibid p. 88.

by Friguia may be explained by the fact that this company has used the surrounding area for dumping sands, red mud and crusts from industrial processes (croûtes de décanteurs). Interestingly these figures are quite different from those based on government documents, (Table 2) provided in the PNAE 1993, which also included the surface area affected by gold mining at AREDOR.

Table 2
Surface areas affect by mining companies³⁴

Office des Bauxites de Kindia

Surface area degraded - 300 hectares

Surface area restored - 10 hectares

Société Friguia

Surface area degraded - 200 hectares

Surface area restored - 10 hectares

Société AREDOR

Surface area degraded - 570 hectares

Surface area restored - 70 hectares

Compagnie des Bauxites de Guinée

Surface area degraded - (n.a.)

Surface area restored - (n.a.)

b) Air pollution from dust emissions

³⁴Republic of Guinea, PNAE 1993, page 48.

The most important aspect of the pollution of the air caused by mining companies is through dust. This is particularly true of the bauxite / alumina industry. However, the visits conducted by M.S. Diallo, revealed that certain of the companies in this sector in Guinea did not have a scale with which to measure emissions.

A first source of dust are the quarries where the setting off of explosives and the movement of trucks loaded with the mineral along dirt roads produces vast quantities of dust particularly in the dry season. Once the bauxite is loaded in the trucks, according to Diallo, the risk of dust emissions is slight because the bauxite is humid (8 - 12%) and it is in the form of solid blocks.³⁵

A second source of dust comes from the transformation of bauxite (crushing and drying). During the crushing phase especially in the dry season, cyclones transport the dust in chimneys and release it into the air. In Guinea, the most pressing problem concerns the plant at Kamsar. When this plant was conceived, the installations to rid the dust from the gases released from the drying of the bauxite included a set of cyclones followed by electrostatic filters. After years of use, the internal parts of the filters became corroded due to the fact that the temperature of the gases which come out of the dryers were lower than their point of "rosée acide". The problems with the proper functioning of the dryers were so severe that they led to the complete dismantling of the internal works. A 1992 study commissioned by the company in order to restore existing capacity and extend it, mentions an increase in the quantity of dust particles emitted by the dryers. As a result, the emissions at the chimney level had reached a level of between 300 and 400 tons per day from the three dryers.³⁶ The quantity of emissions is of course proportional

³⁵ M. S. Diallo, *op. cit.* p. 89

³⁶ *Ibid.* p. 90

to the rate at which bauxite is fed the dryers and this rate varies from 650 to 850 tons per hour. The same study indicates that the concentration of dust in the gases at the entrance of the cyclones was 170g /m³, as opposed to 19 g /m³ at the opening of the cyclones.³⁷

In terms of the impact of these emissions on the local population, the 1993 PNAE notes that at Kamsar, the dust particles from the dryers spread with the wind both to the city and to nearby urban areas.³⁸

A third source of dust particles is that which results from alumina refining at the Friguia plant and from loading operations at the mining port. The clients of this Company require grains of alumina which have a diameter of at least 45 microns so as to permit saving energy in the high furnaces during the production of aluminium. Even if clients accept grains of a diameter that is less than 45 microns, these must not exceed 12% of the quantity supplied. In order to satisfy the requirements of clients, the Company recycles small grains in order to increase their size consist (“granulométrie”). With a dimension of 45 microns in diameter, normally one should not register important dust emissions. Nevertheless there is always a danger of crumbling of large grains in shipping. It is this which is the cause of the dust particles which are released during calcination and during the stages of transformation into alumina.³⁹

³⁷This level of emissions is indeed very high as revealed by the fact that a study on the industrial pollution of Guinea undertaken by a consultant for the United Nations Centre on Transnational Companies had advised the government that it should set the norm for dust emissions at between 30 and 150 mg /Nm³ and if necessary, set norms on a case by case basis. M. S. Diallo. *op. cit.* p. 90. Footnote 44.

³⁸ PNAE 1993, *op.cit.*, p. 46

³⁹M.S. Diallo, *op. cit.* p. 90.

At Friguia's mineral port, the loading circuit of alumina into the boats includes 1500 meters of non - covered transport belts and at the end of the chain, two loading gates drop the alumina some three metres into the boat holds. During this long loading circuit, there results a spreading of alumina powder which invades the peninsula of Kaloun at Conakry and the spread of dust is intensified by frequent sea currents.

The fine particles which are emitted from the chimneys during the calcination of alumina, together with the emissions of alumina dust which are dispersed during the loading of the boats, bring the estimated loss to 15 kg. per ton of alumina produced. In view of an average annual production of alumina of 600,000 metric tons, the loss could reach 9000 tons of alumina over the same period. At the port of Friguia, it is estimated that this loss is not at all enormous for one producer. However, the pollution which it causes is such a hindrance to the population living in the area that representatives from Friguia intervene regularly to reassure the public that alumina powder does not present any toxic danger for human beings.⁴⁰

c) Water pollution through the rejection of red mud.

The red mud which has been identified has several origins. In the process of production, the terminology used by the 3 Guinean companies is "bauxite mud" and in that of alumina extraction, "red mud". Bauxite mud may be found in quarries as well as in the installations of the plants treating bauxite. The information gathered in the study by M.S. Diallo suggests that wherever there is dust in the dry season, there will be mud

⁴⁰Ibid. p. 91.

The PNAE 1993 suggests that the alumina dust which spreads to the city from the port installations of Friguia at Conakry is among the forms of pollution which is best known to Guineans. With the support of funds from the Caisse Française de Développement some improvement has been made according to this source. Alternative sources however, based on first hand recent observation (1997), speak of the respiratory and eye problems suffered by the local population because of this source of pollution.

during the winter season. The mud comes most frequently from washing the machines (conveyor belts, feeding chains of the crushing mill) and from the meeting points of the feeding conveyors for the dryers. The most important problem is experienced at the plant at Kamsar because of the large quantity of bauxite which is treated there each day.⁴¹

The information gathered by Diallo suggests as well that the Friguia plant rejects one ton of mud per ton of alumina produced and that each ton of mud contains on average 15 kilograms of soda (Na OH) which has not been recovered by washing. Moreover this mud is composed on average of 60% iron ore (Fe_2O_3), 30 % lime (CaCO_3) with traces of titanium (TiO_2). If one calculates on the basis of the production of 600 000 metric tons of alumina per year, the plant at Friguia generates an equal quantity of red mud. Over the company's 30 years of existence, the quantity of red mud produced may very well exceed 20 millions metric tons. It should be mentioned that up until the end of the 1980's this mud was simply dumped in the Konkouré river which flows not far from the plant⁴²

It has now been established that the mud resulting from the extraction of alumina is very caustic. Moreover, one study quoted by M.S. Diallo⁴³ suggests that numerous toxic metals accumulate in these muds in important concentrations in the following order : Cr, Mn, Pb, Sr, Ba, Mo, Sb, Bi, Zn, Co, Ag, As, Li, and Cd. Other researchers have also studied this questions. Wood⁴⁴ states that Cu, Co, Ni, Pb, Zn, Cd, Sb, Bi, Ag, and As are

⁴¹Ibid. p. 92

⁴²Ibid. p. 93

⁴³Patel, C.B. Jain, V.K. and Pandley G. S. "Micro Polluants in Red Mud Waste of Aluminium Plants", in International Journal of Analytical Chemistry, 1986, vol. 25, pp 269-274. Quoted by Diallo, op. cit. p. 93.

⁴⁴Wood, J.M., "Biological Cycles for Toxic elements in the Environment", Science, 1974, no. 183, pp. 1049-1052. Quoted by Diallo, op.cit. p. 93.

highly toxic and relatively accessible. Moreover, Chen, Wagh and Graham⁴⁵ refer to studies conducted in Jamaica in order to demonstrate that red mud from aluminium smelters had neither a tendency to consolidate nor to dehydrate and that the pH value was not reduced though lyewashing.

These authors report that a study conducted on one of the sites of red mud deposits in Jamaica, calculated with the help of the company's total budget, suggests that 6000 tons of caustic soda filtered into the soil annually. Diallo concludes that on the basis of the results of the tests done at Friguia in 1994, it is very likely that the situation at the Guinean plant resembles that of the Jamaican study.

The author of the table below finds the results surprising in view of the fact that the pH of the water is very high in all the samples of the emissions collected at the point of contact of the mud with the waters of the Doté river and the Konkouré.⁴⁶

⁴⁵Chen, A.A, Wagh, A.S and Graham, W.A. "Materials Balance Studies in a Pond of Bauxite Waste Tailings in Jamaica", in Journal of Environmental Management, no. 25, pp. 113-123, Quoted by Diallo, op.cit., p. 93.

⁴⁶Ibid. As the same study notes, proposals had been made in the 1990 report quoted above, to the effect that the norm for emissions into the water be fixed on the basis of a range of between 5.5 and 8.5 for the pH value.

Table 3⁴⁷**Results of the analysis of wastes rejected by Friguia in the Konkouré**

Site of sample	Quantity of soda (gr/1)		Suspended matter (g/1)		pH in water	
	1	2	1	2	1	2
Upstream of the mud dam	1.09	1.02	0.009	0.016	11.33	11.35
At the base of the chute	0,40	0.28	0.028	0.156	11,31	9.99
Infiltration at the base of the chute	1.14	0.99	0.031	0.033	10.10	11.33
Junction of the Doté with the Konkouré	0.95	0.73	0.037	0.034	11.19	11.23
500 metres downstream from the junction	0.02	0.03	0.009	0.004	9.92	8.34

1 : Analysis conducted June 29, 1994

2 : Analysis conducted July 13, 1994.

Before addressing the question of evaluating the costs of the above impacts, it is interesting to note that the 1993 PNAE also deals with water pollution. It notes that two industrial subsectors are noteworthy for their use of relatively important quantities of water and rejecting it in a polluted state : the mining industry and the agro-food industry⁴⁸.

⁴⁷Table composed by M.S. Diallo, op. cit. p. 94, Source : Friguia. Service de Développement, July, 1994.

⁴⁸PNAE 1993, op.cit., p. 75.

The pollution coming from the extraction of minerals notes this study, manifests itself essentially in the form of chemical sediments and wastes. That produced by agro-food transformation processes is largely organic in nature.

With regards to mining, the study identifies the five following sites of pollution.

At Siguiki, the Koron and Koba rivers receive the polluted waters from the washing of gold with consequences for the terracing works in spite of the important efforts put forward in this area by the Société Aurifère de Guinée⁴⁹

At Kérouané, the Boulé and Ferougban rivers are polluted by the waters filled with fine particles of mud as a result of the treatment of ores during mining for diamonds and gold by the Société AREDOR.

At Kindia, (Débélé) the halt in the functioning of the purification station and the absence of septic tanks have resulted in frequent overflowing of polluted waters from the sewers. Because of this, there is risk of epidemics for the neighbouring local population from contaminated waters.

At Fria, while there seems to be some controversy about this, the 1993 PNAE suggests that until recently, the Konkouré river also received oil residues and polluted water coming from the alumina plant and the caustic soda or red mud, which had previously been stocked in the Doté valley. The Lakoy river was the recipient of the liquid wastes which contained soda and hydrocarbon channelled by the plant's principal sewage canal. With the help of funding provided by the Caisse Française de Développement, the 1993 PNAE suggests that, as of time of that study there appeared to be a net improvement in the control of red mud and the rejection of waste materials - a point to which we shall return in the last section of this paper.

Finally, at Sanguaredi in the prefecture of Boké, the location of one of the most important bauxite mines, a large quantity of polluted urban water and oil is dumped into

⁴⁹Ibid. p. 47

the Cogon, Pora and Tiapikhouré rivers of the sous-prefecture. The situation is somewhat different according to this study at Kamsar, as the receiving milieu is the sea and the rejected oil is recuperated by oil separators.⁵⁰

Before looking at the financial consequences of the above, certain additional aspects of environmental impacts must be considered. Noise and heat are two important further disturbances caused by mining activities. The workers in the mining plants are exposed through their work, to a very high level of noise caused by the electric power stations, the boiler works, the manipulation of air compressed drills and the setting off of explosives. The most severe levels of noise occur near the electrical generators at the Débélé mine and those of Friguia. The workers are exposed as well, to hot temperatures of activities such as the drying and calcination processes of the ore and the operation of the power stations.

Mining activities have also created migratory movements of workers which give rise to spontaneous agglomerations constituted in large part by slums and precarious dwellings, which are poorly planned, unorganized and where the living conditions of the inhabitants, most frequently, are deplorable. Very often essential services such as access to water, hygiene and the collection of garbage are lacking, with the consequence of exposing certain workers to severe parasitic infections.⁵¹

The 1993 PNAE notes that the analyses undertaken up till its publication on the impact of mining on the environment are not sufficiently documented. However the same study notes that the conclusions of existing studies are sufficient to justify the carrying out of a complete study of this key sector of the economy.⁵²

⁵⁰ This information has been put in question by more recent (1996-97) on the spot observations.

⁵¹ PNAE, 1993, op. cit. p. 48

⁵² “Dans le secteur industriel et des mines, les données ne sont ni fiables, ni cohérentes. Les différents départements concernés ne produisent pas de statistiques sectorielles”. PNAE 1993, op. cit. p. 181.

As was its mandate, 1993 PNAE attempted to evaluate the costs of the degradation of the environment in the mining sector. It concluded in this regard: “Mining activities (33% of export receipts, 55% of foreign currency, 22% of GDP) greatly affect the soil and subsoil and provoke pollution of the air (Kamsar and Conakry), and the water (Siguiri, Kérouané, Kindia, Fria), noise and heat (Débélé), and the destruction of vegetation and the soil. The cost of the degradation of the environment by mining has been estimated at 10,566,153 US\$ or approximately 0.2% of the GDP”.⁵³

Diallo has suggested with regard to these figures that estimates could not be correctly completed because of the lack of reliable statistical information concerning the exploitation of the country’s natural resources.⁵⁴ With regard to the mining sector he points out that the 1993 PNAE had to rely on figures drawn from the January 1991 information journal of the Ministère des Ressources Naturelles, de l’Énergie et de l’Environnement. Concerning the bauxite sector, the costs pertained to the degree of site degradation, and the pollution of surface water by industrial wastes and polluted water from industrial plants. According to Diallo, together, these costs alone totalled approximately 6 billion Guinean francs.⁵⁵ However, the same source suggests that these estimations were not carried out in a manner which is compatible with recognized methodologies for such evaluations.⁵⁶

To conclude this section, beyond the difficulty of estimating costs, the mining of bauxite and the refining of alumina in Guinea have very heavy environmental impacts.

⁵³PNAE 1993, *op. cit.* p. 192

⁵⁴M.S. Diallo, *op. cit.* p. 95.

⁵⁵ The exchange rate is approximately 1000 New Guinean francs = \$ 1US. Therefore 6 billion NGF would represent approximately 6 million US\$

⁵⁶*Ibid.* Diallo refers to Barde J.P. Économie et Politique de l’environnement, Paris, Presses Universitaires de France, 2ème édition 1992.

The different receiving milieu, whether the soil, the air, water or the human beings who depend on these aspects of the environment, are all clearly affected.

It is also apparent, that the negative impacts of these mining activities, whether ecological, economic or human, are not fully documented. As the 1993 PNAE suggests however, although there is need for much more systematic collection of information and undertaking of studies, the information available is fully sufficient to conclude that the mining sector in Guinea has environmental consequences which are severe. With this background it is now possible to examine the 1993 PNAE's recommendation and Guinean environmental legislation more generally, which have attempted to remedy the above situation.

III. Environmental legislation and the mining sector

By the time of the establishment of the Second Republic in April 1984, there emerged increasing awareness of environmental realities around the world as in Guinea, and this context led to the increasing coordination and systematisation of policy in this area.

The result was the creation of the specialised Ministry, "Ministère des Ressources Naturelles, de l'Énergie et de l'Environnement" (MRNE), whose responsibilities were set by Decree No. 007 / PRG / 86 of March 19, 1986 under which was to function a "Secrétariat d'État des eaux et forêts chargé des questions environnementales", responsible for environmental questions related to water and forests (Decree No. 008 / PR6 / 19 March 1986).

Guinean natural resource policy was to be set out in two principal ways :

- 1) legislation (the Mining Code, the Environmental Code and other ordinances and decrees) and
- 2) sectoral national action plans drawn up to better manage natural resources and the environment.

Discussion in this section will concentrate on the legislation concerning the mining sector and the process of drawing up a national environmental action plan from 1989 to the production of the December 1993 PNAE.

a) Legislation

The first Mining Code was promulgated by Ordinance No. 076 /PRG /86 of March 21, 1986 and was inspired by developmental concerns. It was however, based on the premise of state ownership of mineral and fossil substances. More specifically, by virtue of Article 543 of the Guinean Civil Code (Law 004 / APN / 83 of February 16 1983) ;

“La propriété du sol par un particulier ne comporte que la valeur des plantations et constructions faites par celui-ci, le terrain nu faisant obligatoirement partie du domaine de l’État qui est le propriétaire de droit”.⁵⁷

In view of this, the state reserved for itself, the right to undertake activities concerning research and exploitation of mineral substances, as well as the right to grant physical or moral persons authorisations to undertake these activities.

As will be seen, certain responsibilities with regard to the environment contained in the Mining Code, as for example section 2 of Article 121 of the Mining Code, were to be implemented by the Service de l’Environnement, created by Article 13 of the Environmental Code.

Similarly, the 1986 Mining Code was in certain other cases, completed by implementing texts, (“textes d’application”). For example, the procedure for applying for mining and quarry entitlements (“demandes de titres”) was set out by Decree 10236 /

⁵⁷Quoted by M. S. Diallo, *op. cit.* p. 98. This section of the paper draws heavily on Chapter III of the thesis by Diallo, the 1987 Environmental Code and the 1993 PNAE.

SGG / MRNE /88. The latter text defined the documents which each applicant had to supply in order to obtain an operating license (“*permis d’exploitation*”), either for a mining concession or to exploit a quarry.

The proposal for an impact assessment (“*la notice d’impact*”) which was also specified in these documents, spelled out the conditions and the manner in which a proposed construction programme was to satisfy environmental concerns. In this regard, the applicant was to commit himself in writing to rehabilitate and eventually reforest the land occupied as the project advanced.⁵⁸

As will be seen in the following section, changes were to be brought in with the revised Mining Code of June 1995. Perhaps more important than the actual modifications however, was the evolution of the political and economic context into which these changes were brought in, and its implications for the effectiveness of implementation mechanisms.

The second major source of legislation is the Guinean Environmental Code promulgated May 28, 1987 by Ordinance No. 045 / PRG /SGG /87. This document is guided by concerns pertaining to the conservation and good management of the country’s natural resources.

Article I sets down the fundamental principles which aim to manage and protect the environment against all forms of degradation; to develop natural resources; to combat different forms of pollution; and to improve living conditions of citizens, while respecting the equilibrium between human development and that of the surrounding environment.

Interestingly, the Code sets out the intimate links between the protection of the environment and, economic, social and cultural development. This is done in Article 5 which states :

⁵⁸Ibid., p. 100

“The protection and enhancement of the value of the environment are integral parts of the strategy of national, economic, social and cultural development. The development plans set forth by the administration will have among their objectives, taking account of the imperatives of the protection and the enhancement of the value of the Guinean environment”.(My translation.)

On the issue of sovereignty, Article 6 of the Code stipulates that the responsibility for defining a national environmental policy rests with the government, based on the proposals of the Minister in charge of the Environment and the National Council on the Environment.

While the Environmental Code includes numerous clauses which deal with the protection of the soil and subsoil, several of these are particularly pertinent with regards to mining activities, and notably Articles 15, 19 and 20.

Article 15 of the Code is fundamental and stipulates that the soil, subsoil and the resources which they contain, whether they are limited renewal resources or not, are protected against all forms of degradation and are to be managed rationally.

According to Article 19, proposals to use and prepare the soil for the purpose of agriculture, industry, urbanisation, etc., as well as for research and the exploitation of the resources of the subsoil in any manner which might hinder the Guinean environment in ways set out by the texts of the present Code, are to be submitted for prior joint authorisation of the ministerial authority concerned and that in charge of the environment. The preceding text established the conditions according to which authorisation would be granted, as well as the classification of the activities and usage which, in view of the dangers which they present to the soil, subsoil and resources would be prohibited or submitted to specific constraints laid out by the Administration.

Concerning the rehabilitation of land, Article 20 refers to Article 121 of the 1986 Mining Code and stipulates that a rehabilitation plan for agricultural use or

reafforestation, which is to be the responsibility of the holder of an entitlement for mining or quarry excavation, must have the prior and joint approval of the Minister in charge of Mines and the Ministerial authority in charge of the Environment. The implementation of the dispositions in this regard in the Mining Code is defined, as noted above, as the joint responsibility of the Service de l'Environnement, in collaboration with the "Direction générale des Mines et de la Géologie" and any other relevant administrative service.

With regard to wastes, Article 66 stipulates that there is an obligation to treat waste materials and polluted water from mines by physical, biological or chemical treatment, before these are restored to the environment.

As noted above with regard to the obligation to rehabilitate land used for mining activities (Article 20), the Environmental Code also reinforces other clauses in the Mining Code, notably through Article 82 which deals with "notice d'impact". This Article which lays out the procedure concerning assessment studies, stipulates that once the lay out of a project, construction works or installations, (because of their size, the nature of the activities for which they are to be set up or by their impact on the natural milieu), risk hindering the environment, the applicant or initiator of the project must submit to the ministerial authority in charge of the environment, an impact assessment study which permits evaluating the direct or indirect effect of the project on the Guinean ecological equilibrium, the quality of life of the population concerned, and the implications for the protection of the environment more generally.

Consequently, all land clearing of more than ten hectares and the operation of mines and quarries comes, therefore, under the jurisdiction of Decree 199 / PRG /SGG /89 which sets the requirements concerning environmental impact studies. By virtue of this decree, the document concerning the impact assessment which the applicant or initiator of the project is to submit must necessarily include the following elements :

- i) indications concerning the initial state of the site and its environment;

- ii) an evaluation of the foreseeable consequences of undertaking the project on the site and its natural and human environment;
- iii) a statement of the measures envisaged to do away with, reduce and if possible compensate for the consequences of the project on the environment and an estimation of the corresponding expenses;
- iv) and a presentation of other possible solutions and the reasons for which, from the standpoint of the protection of the environment the project was retained.⁵⁹

Concerning the protection of the soil and subsoil, a further decree was prepared at the beginning of the 1990's. This Decree sets out a national policy concerning the soil and subsoil ("Politique nationale du Sol et du Sous-sol"), and proposes measures which should be taken to protect from degradation in this area and, if necessary, to remediate such degradation.

With regard to mining activities, the Decree constrains holders of mining or quarry entitlements to a certain number of obligations including:

- 1) avoiding to the maximum the degradation or destruction of agricultural land;
- 2) recuperating and recycling displaced earth suitable for vegetation;
- 3) recuperating felled trees in order that they may be used for appropriate ends;
- 4) ensuring an adequate treatment of solid wastes and soiled water so as to prevent, reduce and control the pollution of the soil and subsoil.

At the end of 1995 the above Decree, which is of obvious importance for mining activities, had still not been ratified and it has not been possible to confirm that this has been done since that time.⁶⁰

⁵⁹Ibid. pp. 101-102.

⁶⁰Ibid. p. 102.

b) National action plans

The process of drawing up a Guinean National Action Environmental Plan began in 1989 and emerged in the context of the World Bank's initiative taken in 1987, encouraging such plans as a means to ensure that the impulse for environmental policy be nationally rather than foreign driven.⁶¹

In Guinea it was recognized that the approach to environmental management must be multi-sectoral. Consequently, at its first meeting in June 1989, the Conseil de l'Environnement which had been created to advise the ministry in 1987 in this area, recommended the creation of four commissions :

- Commission de la conservation et de la préservation de l'environnement;
- Commission de la lutte contre les pollutions et les nuisances;
- Commission de l'environnement et du développement;
- Commission de l'information et de l'éducation environnementale.⁶²

Furthermore, and as revealed by the creation of the third Commission, in the Guinean PAE there was a clear desire to conceptualise environmental strategies within the broader context of macro-economic policies and a more global concept of development. The multisectoral perspective and emphasis on development that characterised the approach at the end of the 1980's and the very beginning off the 1990's, are illustrated by the association during this period, of environmental questions within a Ministry which also had the responsibility for natural resources and energy. Finally, the

⁶¹Émilienne Anikpo N'Tame. 'L'Afrique face au futur : L'Afrique va-t-elle vers une catastrophe écologique à l'horizon 2025? Quelles options stratégiques prendre?' dans African Development Review. Special Issue on Africa and the Future. vol. 7, no. 2 December 1995, p. 222.

⁶²République de Guinée. Plan d'Action Environnementale (PAE), Plan d'Action Biodiversité, vol. 2, Union Mondiale pour la Nature (UICN) August, 1991, p. 29.

process of drawing up the PAE was seen not only as a technical exercise but as participatory process which was to have a mobilising and educational effect.

Among the important preparatory stages to the 1993 Plan and reflecting the developmental orientation of thinking at that time, one may cite the 1990 report : “Environnement et Ressources Naturelles. Cadre juridique et institutionnel pour un développement durable”, which the subsequent 1993 documents suggests was to be the cornerstone to the PNAE (“constitue la pièce maîtresse du PNAE”).⁶³

While it is beyond the scope of this paper to do a complete analysis of the 1993 Plan National d’Action pour l’Environnement which is over 300 pages long, several of its characteristics seem particularly noteworthy.

Most fundamental is the fact that the 1993 PNAE was based on the premise that the protection of the environment and the nature of the pattern of development were intimately linked, a point to which we shall return.

As noted earlier, with regard to mining the document notes that the country has important potential in this area, but that the landscape is marred by vast scars left by open-pit mines from which wastes are insufficiently controlled. Moreover, areas which have already been exploited are not rehabilitated. The question, pursued in the document, is how is Guinea to develop a good reputation as a mining operator capable of exploiting its potential, while protecting its environment ? As noted in the previous section, the Plan provides as much information as is available to document the impact of mining and draws attention, as we have seen, to the need for much more complete information.

With regard to the conceptualisation of environmental policy, the section on “Global strategies for the management of natural resources” contains a sub-section (C. III pp. 97-98-99) which deals with “Popular participation in conservation”, which explicitly links the protection of the environment and the nature of development strategies :

⁶³Report of Mohammed Ali Mekour (Consultant FAO) 1990.

“The problem of the conservation of resources is narrowly associated with the implementation of an alternative economic strategy which favours rural people”.⁶⁴

The Plan goes on in a subsection on the “Struggle against poverty”,⁶⁵ to explicitly set out the links between environmental policy, sustainable development and the reduction of poverty. An effective strategy aimed at simultaneously resolving the problems of poverty and those of the environment, continues the document, must not only be based on the improvement of production and the social conditions of the population, decentralisation and local participation, but also on a process of democratisation with the support of a competent and conscientious administration.

Before considering the 1993 Plan’s recommendations for an environmental strategy in the mining sector, and more generally, its conceptualisation of the role to be played by the public sector in this regard, it is interesting to note that the section dealing with the management of resources in the mining sector, “Gestion des Ressources Minières” has somehow been omitted from the section where one would have expected it.

⁶⁶

The recommendations put forward by the 1993 PNAE are of two types: incentives for environmental protection and prevention of negative impacts.⁶⁷

Concerning the incentives, it is proposed that mining interests should:

- A) elaborate plans to rehabilitate operated sites;
- B) undertake the supervision of the quality of water which has been treated;

⁶⁴PNAE 1993, p. 98.

⁶⁵Ibid., pp. 196-198.

⁶⁶On page 193, where this section would logically have been included, there is a gap in the paragraphs presented which jump from number 50 to 89, as if the mining section had been omitted from the final document.

⁶⁷PNAE 1993 p. 197

- C) collect and dispose of household wastes;
- D) see to the hygiene, the living conditions and security of workers

The preventive measures it is suggested, should include:

- A) impact studies which will supply the technical information needed for reflection and discussion;
- B) the reinforcement of institutional structures including the Direction Nationale de l'Environnement, le Conseil National de l'Environnement, and legislation (codes and other texts);
- C) training, information and education so as to permit the integration of environmental questions into the decision-making process.

With regard to the institutional context, the Plan goes on to call for a series of reforms.⁶⁸ These include the attachment of the Conseil National de l'Environnement, (CNE) to a political entity at the highest hierarchical level, the creation of departmental units of the CNE, and finally the restructuring of the territorial organisation of the environmental services, which should be granted additional human and material support.

What becomes quite apparent is the recognition by the 1993 Plan that the carrying out of these recommendations will depend on political support at a high level.

In this regard, the Plan is explicit: "Une structure civile autonome, dotée de cadres de haut niveau, profitant d'un appui financier et technique conséquent et d'un pouvoir politique assez élevé, ayant pour mandat la recherche et la réflexion en vue du renforcement des structures nationales et la connaissance des réalités opérationnelles de terrain jouerait un rôle de conseiller auprès des ministres, dans la gestion financière et dans l'exécution des projets".⁶⁹

⁶⁸Ibid, p. 201

⁶⁹Ibid

The 1993 PNAE presents very concrete recommendations concerning priority actions in the short and medium term. Of the 20 proposals, several concern the need for information. For example it is recommended:⁷⁰

- to undertake an inventory and an evaluation of natural resources and establish a data base in this area;

- to undertake the planning and management of water resources at a regional level and most particularly with regard to river bassins;

- to establish laws and regulations in this area;

- to undertake measures to stop the degradation and permit the national use of available resources by seeing to their conservation and renewal where necessary;

- to initiate measures concerning water purification thus permitting a decrease of water pollution; the treatment of Conakry's water and that of the large cities of the interior; the surveillance of the waters of the Konkouré river starting from Fria; the stricter control of sea ships and the stricter control of water pollution caused by industry.⁷¹ Within this framework, continues the Plan, legislation concerning the quality of air will be of major importance.

With regard to information, an entire chapter (VII) deals with information systems concerning the environment, outlining existing projects and proposing new initiatives.

With regard to mining, this section outlines the various types of information available from the Direction Nationale des Mines and the Direction Nationale de la Géologie.⁷²

Having noted the lack of information, the Plan describes in specific terms in this chapter of 36 pages, projects which could collect and systematise information including the creation of national norms adapted to an inventory of Guinea's natural resources for this

⁷⁰Ibid p. 204

⁷¹Ibid., p. 204

⁷²Ibid., p.212

purpose.⁷³ Finally, a last section sets out the nature of the institutional framework which is seen as necessary in order to carry out the 1993 PNAE. The underlying principles explaining the need for such a framework are reaffirmed and the first of these reiterates the links between rational management of the environment on the one hand, and social and economic development, on the other. In order to achieve this, the state, it is specified, must recognise its fundamental responsibility of ensuring coherence in the use of resources by the different agents of development:

A) “Les ressources naturelles renouvelables et non renouvelables de tout pays constituent des composantes essentielles de l’Environnement dont la mise en valeur et la gestion rationnelle sont les garants d’un développement économique et social durable de toute nation en général.

Pour la République de Guinée en particulier, ces préoccupations doivent constituer la mission fondamentale de l’Etat en vue d’en assurer la cohérence par rapport aux besoins d’utilisation de ces ressources dans les différentes branches de développement”.⁷⁴ (My underlining).

The need for political support as a condition for carrying out strategies for the management of natural resources and the environment is reaffirmed in very strong terms in the following pages. It is suggested that there is need for a “strong voice” in order to ensure intersectoral coordination and management. The creation of intersectoral links is presented as an indispensable condition in view of the fact, continues the Plan, that environmental concerns touch all sectors of human life and often entail conflicts of interest.⁷⁵ The Plan calls for the creation of a coordinating entity at a much higher level than the sectoral ministry of execution. Similarly, it is suggested that the formulation of

⁷³Ibid., p. 235

⁷⁴Ibid., p. 305

⁷⁵Ibid., p.306

environmental policies must take place at a much higher level than that of the executing bodies in order to harmonise diverse and contradictory interests.

The highly political nature of environmental management is no where more clearly set out than in the recommendation made by the Plan in favour of political support at the highest echelons through the creation of an interministerial commission at the Cabinet level:

“Soutien politique: La gestion environnementale exige un soutien politique de haut niveau pour être efficace au niveau national, et à celui des préfectures, des communes, des arrondissements et des communautés de développement social. Ainsi, quel que soit le type de mécanisme institutionnel adopté par le Gouvernement, il convient de créer une commission interministérielle de haut niveau (Cabinet) qui sera chargée de fournir des conseils de politique générale à l’institution créée ou renforcée”.⁷⁶

To conclude therefore, the conception of environmental management contained in the 1993 PNAE is one which sees environmental concerns intimately linked with developmental strategies, whether this concerns the analysis of the origin and the nature of the environmental problems, or the proposed strategy to remedy such problems. Furthermore, this analysis of environmental questions led to the recommendation of an interventionist role for the public sector in the coordination and harmonization of sectoral interests in order to ensure environmental protection. Interestingly however, and as the Plan itself specifies at the beginning of the section on the proposed administrative framework and role of the public sector,⁷⁷ this section whose title was placed in brackets, did not managed to receive political approval when the Plan was published in

⁷⁶Ibid., p. 307

⁷⁷Ibid., p. 305. A warning is included to the effect that : “Cette proposition est donnée entre crochets pour indiquer qu’elle n’a pas à ce jour fait l’objet de la concertation à tous les niveaux décisionnels. Elle est le résultat de la consultation que l’équipe du PNAE a mené pour préparer le cadre institutionnel de la mise en oeuvre et de suivi du Plan”

December 1993 - a situation which was premonitory of changes to come, as we shall see in the next section.

IV. The bauxite alumina sector and evolving environmental policies in the 1990's.

As has been argued eloquently elsewhere, a very strong case can be made for resetting the analysis of environmental policy in a broader context capable of taking account of external factors as well as internal dimensions. As J. Clapp suggests:

“Most of today’s environmental problems can be traced to economic activity of one sort or another. And because African economies are profoundly affected not only by internal economic policies, but also largely by global economic conditions, these external economic relationships impact on Africa’s environment in a variety of ways and set the wider context within which local environmental degradation takes place.”⁷⁸

Because of Guinea’s strong reliance on the mining sector, this observation is of particular relevance for the case study at hand. Consequently, although it is not possible to enter into detail, this section of the paper will proceed in four steps. First, it will present a very brief overview of developments in the bauxite/alumina sector during the 1990’s. Second, in this context it will review the introduction of new legislation in the mining sector and suggest certain elements concerning its impact. Third, it will reset Guinean mining policies in the broader context of those proposed by the World Bank for this sector, notably with regard to public versus private sector debates as these concern the environment. Finally, it will review new Guinean

⁷⁸ Jennifer Clapp, “Global Economic Factors in Africa’s Environmental Crisis”, to be published in Amadu Sesay and Sola Ankinrinade (Editors), No Place To Hide: Africa in the Post-Cold War World: Essays in Honour of James Mayall. Forthcoming 1997. Mimeo, p. 8.

environmental policies introduced with the 1994 Plan National d'Action pour l'Environnement.

A. The mining sector in the 1990's.

Further to the 1985-87 price negotiations which abolished the Guinean bauxite levy, an agreement was signed for the period 1988-91 introducing a floating tax that would reflect the price movements of aluminium on the international market.⁷⁹ The new taxation agreements provided for a greater sharing of risks and benefits for the Government vis-à-vis its foreign partner shareholders. Taxes were to increase during upswings in the global demand for aluminium but to decrease when prices for these products declined. As a result, the Guinean economy found itself more exposed to fluctuations in the international aluminium market. At the same time, the new arrangements in the case of CBG translated into a reduction of tax payments in the medium term. This was not merely as a result of aluminium price projections, which various studies suggested would remain flat, but because of “a peculiarity in the formula which gives decreasing allowances for costs as time goes on.” As a World Bank report on Guinea went on to explain: “The result of this is that real tax revenues will decline under a wide range of assumptions about the future aluminium price movement.”⁸⁰

In another document, a World Bank study projected:

“ if current pricing and tax arrangements are maintained, Government revenues from CBG operations are projected to decline again in real terms by 25-30 per cent during the 1990's, while CBG's annual production will likely increase to 12

⁷⁹ For more detail see “Guinea's Economic Performance Under Structural Adjustment,” op.cit., p.432.

⁸⁰ Republic of Guinea, Country Economic Memorandum, Vol. 2, op.cit., p. 36.

million tonnes. The instability and decline in the Government's revenue flow from mining taxation will likely be considerable during the 1990's."⁸¹

Subsequently, World Bank estimates suggested that in fact Guinean export receipts from mining which include those from gold and diamonds but of which those from bauxite and alumina are by far the most important, had dropped by 35% between 1990 and 1993, with a decline in government revenue from the mining sector of nearly 40%.⁸²

My own calculations reveal a decline in the contribution of mining revenue to the Government's fiscal receipts from 61.2% in 1991 to 29.4% in 1995, with an estimate of 26.8% in 1996.⁸³ Moreover, these figures suggest that over the period 1990-1994, there occurred a drop in the value of Guinean bauxite exports from \$447 million to \$272 million, and for alumina exports from \$166 million to \$103 million. It may also be shown that the contribution of mining revenues as a per cent of total Government revenue dropped from 73.7% to 46.1% between 1986 and 1991 and to as low as 20.2% in 1995. The estimated projection for 1996 was 19%. Finally, as may also be shown, the contribution of mining receipts as a per cent of GDP dropped from 11.1 to 7.9% between 1986 and 1991 to reach 3.0% in 1995.⁸⁴

It should be recalled that these declines took place in the context of the increase of production and the improvement of the competitiveness of Friguia as of 1989, when exports increased to 600,000 tons annually, and in the context of important investments in

⁸¹ World Bank, Guinea: Mining Sector Review, (Washington, DC, 10 July 1990) Report No.8692, p.15.

⁸² The Economist Intelligence Unit, Guinea, Sierra Leone, Liberia. Country Report. 3rd quarter 1995. London, p.14.

⁸³ Bonnie Campbell, "Restructuration globale, contraintes externes et relance économique nationale: l'expérience de la Guinée dans le cadre de la globalisation de l'industrie de l'aluminium." "Presented to the Conference Globalisation, Compétitivité et Sécurité Humaine, organised by the European Association of Development Institutes, Vienna, September 11-14, 1996.

CBG which permitted production to reach 11.5 million tons in 1990-91, production levels which were maintained and even surpassed in following years. One might justifiably have expected that these two developments would have compensated for SBK's poor performance over the same period which, under the circumstances, hardly seems a satisfactory explanation for falling revenues from this sector.

It was in this context of the dramatic decline of mineral receipts that an attempt was made to introduce a "rescue plan" through the further liberalisation of legislation and regulations in the Guinean mining sector.

B. Legislation in the mining sector in the 1990's.

The "rescue plan" for the mining sector was to include the liberalisation of tax policies, new incentives to attract investment from the private sector and modifications in the regulations pertaining to employment conditions and the repatriation of profits. According to its initiators, the further liberalisation of the sector would bring about substantial increases in the production of bauxite and alumina and rapid expansion of activities concerning the extraction of gold and diamonds over the next decade:

" The whole mining sector will soon pass under the microscope as the World Bank plans to fund a review of the current minerals code. The legal and fiscal regimes governing mining will be examined and harmonised, and a simplified procedure for the acquisition of mineral rights is expected to be introduced."⁸⁵

It was out of this review that the new Mining Code was introduced in Guinea in June 1995, effectively introducing a further liberalisation of the country's policies concerning the extraction of the country's resources in its leading economic sector. The

⁸⁴ Ibid. These figures are drawn from Tables 2 and 3. Mimeo p. 19 and p. 20 respectively.

⁸⁵ The Economist Intelligence Unit, Country Report, 3rd quarter, 1995, op.cit.,p.14.

broader economic setting into which the Code was introduced, is clearly important for interpreting the nature of the modifications which were made.

In conformity with the 1986 Mining Code, Article 3 of the 1995 document reaffirms that mineral and fossil material contained in the subsoil or at the surface, as well as in groundwater and geothermal deposits remain the property of the state and are not subject to private appropriation. However, entitlement holders, (Article 15), become the proprietors of extracted substances. This provision is reinforced by Article 21 which states that in accordance with international agreements, individuals, as defined under the Code's Article 8, are guaranteed "free access to raw materials". Article 11 (Mining agreements) guarantees the stability of rights and obligations notably with regard to state participation.

Article 16 (Protection of the Environment) stipulates that operations must be compatible with the Environmental Code, but significantly, the burden of responsibility concerning enforcement rests with the companies:

"Les entreprises doivent prendre les mesures nécessaires à la prévention de la pollution de l'environnement, aux traitements des déchets, émanations et effluents et à la préservation du patrimoine forestier et des ressources en eau."⁸⁶

Article 17 deals with compensation to the state by the holder of an entitlement of a mine or a quarry, if damages or prejudice are caused under the existing provisions. Subsequently, in Article 73, it is set out that specific authorisations need to be obtained in order to proceed to certain types of activity such as land clearing, but the activities

⁸⁶ République de Guinée, Code Minier, (Conakry, 1995),p.7.

mentioned are not very inclusive, nor is any reference made in this clause to the Environmental Code.

There is nothing in the 1995 Mining Code about “notice d’impact,” nor about impact assessment studies, nor specification as to shared responsibilities with the Service de l’Environnement as had been specified in Article 121 of the 1986 Mining Code. All one finds apart from Article 16 which as noted, was not very constraining, is a brief general reference to “the need to respect existing codes including the Penal Code, Labour Code and Environmental Code, failing which, penalties will be applied”. In this sense, environmental obligations seem much less prominent and certainly much less specific in the 1995 Mining Code than in the preceding one.

As noted, the new World Bank backed Mining Code approved in June 1995 had as its objective, stimulating this economic sector by strengthening mining title rights, making the fiscal regime more attractive to investors and allowing for greater repatriation of profits. To this end, the elements subject to tax exemptions are spelled out in detail in Article 143. Licensing procedures have been simplified, greater legal guarantees have been provided and state participation in mining activities is being reduced.

The Guinean Ministry of Mines and Geology underlined the increasing shipments of bauxite at the end of 1995 as proof of the success of the new policies of deregulation and further liberalisation and used this occasion to make an appeal for new foreign investment in the mining sector.⁸⁷ Guinea’s special agency which hopes to woo new mining investors from Asia is headed by the Minister of Mines and Geology, Facinet

⁸⁷ The Economist Intelligence Unit, Country Report, 1st quarter, 1996. p.13. According to a spokesman for the Government’s mineral promotion agency: “Our bauxite reserves are almost infinite...there is room for everybody.” Ibid.

Fofana. The new agency is to act as a one-stop window, advising and coordinating contacts and visits by potential Asian investors and handling administration.⁸⁸

There were in fact unmistakable signs of an early response to the measures of liberalisation with a wave of interest in gold-bearing deposits in several parts of the country and the opening up of fresh bauxite reserves. Iran has agreed to fund the rehabilitation of the rail system in return for bauxite and alumina to be supplied from a new mine near Dabola-Tougué, and talks continue concerning new partners interested in participating in the Société des Bauxites de Kindia.⁸⁹

The Ukraine and Russia plan to begin joint development of the Dian-Dian bauxite deposit, at an estimated total cost of \$170 million, and a Ukrainian - Russian joint venture is expected to be set up to fund the project. Among companies reported to be interested in the scheme are the Nikolayev alumina and Zaporozhys aluminium works from Ukraine, the Russian group Rosaluminium and, possibly, the Krasnoyarsk or Brask aluminium works. The intention is to process the annual bauxite output of the site (planned at 10-12 million tons) in the Ukraine and Russia. One quarter of this will go to the Ukraine.⁹⁰

Recent trends towards defiscalisation and deregulation in Guinea are also illustrated by developments at Friguia. As will be recalled, this alumina company which is 49% owned by the Guinean Government and 51% by the Frialco consortium (30% Pechiney, 30% Noranda Aluminium, 20% Alcan and 20% Hydro Aluminium, Norway) has won a range of customs and tax concessions from the Government, including

⁸⁸ The degree of openness of the mining sector was such that according to one source, the Minister had to dispel fears that he was supervising what he called a “garage sale” of Guinean resources and stress that: “the intention was to link foreign and Guinean businessmen and that, in the longer term, he envisaged Guinean nationals playing the leading role in many of the projects concerned.” The Economist Intelligence Unit, Country Report, 3rd quarter, 1996.p.14.

cancellation of a \$12.50/ton export tax on alumina, enabling it to continue operations and contemplate expansion of its 600,000 ton/year facility. The privileged fiscal regime, granted for a duration of 15 years, will be re-examined every five years. A “management improvement” plan has also been adopted, which will progressively relieve the company from having to provide free water, electricity, social services and medicine for its staff and their families, and to concentrate resources on its primary business of mining and refining.⁹¹ The company has stressed that these measures will not involve any job losses but has said that retiring employees will not be replaced. It suggests moreover, that success in the recovery plan will allow a programme aimed at boosting output to 1.3 million tons of alumina per year.⁹² Output increased at the beginning of the 1990’s and then fluctuated from 639,200 tons to 623,500 tons in 1994 and 1995 respectively.

In spite of Friguia’s recent 4-year project to rehabilitate and to modernise the railway link and to improve environmental protection, the company continues to come under criticism. The Norwegian environmental organisation NorWatch claimed in 1996 that Friguia’s open-cast mining operations are very damaging. Bauxite deposits, according to this organisation, are spread over 1152 square km and the mining is alleged to have caused extensive environmental destruction. Villages have been forced to relocate and waste products, notably those used in the alumina smelter process, are said to have escaped into the surrounding groundwater.⁹³

⁸⁹ The Economist Intelligence Unit, Country Report, 1st quarter, 1996.p.6

⁹⁰ The Economist Intelligence Unit, Country Report, 2nd quarter, 1996.p.14.

⁹¹ The Economist Intelligence Unit, Country Report, 3rd quarter, 1995.p. 13.

⁹² Ibid.

⁹³ The Economist Intelligence Unit, Country Report, 3rd quarter, 1996.p. 16. A spokesman for Norsk Hydro, a partner in Friguia, admitted that the company was not happy with mining methods used at the site, but said that the measures to improve the local environment were being implemented and would be in place within the next two years. Ibid.

The government's initiatives to reform legislation and regulations in the mining sector have received the strong technical and financial support of the World Bank. In early 1996, the International Development Association (IDA), the World Bank's concessional funding affiliate awarded Guinea \$12.2 million for a project to promote mining sector investments. The aim of the project is to help the Government implement its mining policy which puts priority on attracting private investment. More specifically, it provides for harmonising the legal and fiscal aspects of the new mining code with other regulations; drawing up a geological map for the eastern part of the country (where there is good potential for gold and other base metals); setting up a data bank and computerising the Government's geological services; and advising on the efficiency, viability and ways of restructuring state-run mining companies.⁹⁴ In view of the importance of the role played by the World Bank and IDA in the recent process of policy reformulation in Guinea, it is useful to refer briefly to policy discussions within the World Bank with regard to mining strategies in Africa and their environmental implications.

C. The Policies of the World Bank concerning mining activities and the environment in Africa.

While beyond the scope of this paper to enter in any detail into this vast subject which has been the object of numerous publications and discussions,⁹⁵ it could be said as

⁹⁴ The Economist Intelligence Unit, Country Report, 2nd quarter, 1996, p.14. A high-powered Guinean delegation was in Washington in mid-March 1996 to sign the agreement with IDA and to put flesh on the skeleton plan. Ibid.

⁹⁵ To mention just a few, see for example: François Falloux and Lee M. Talbot, Crisis and Opportunity. Environment and Development in Africa. Earthscan Publications, London, 1993. Roderick G. Eggert, (Ed.), Mining and the Environment. International Perspectives on Public Policy, Resources for the Future, Washington, DC, 1994. David Reed (Ed.), Structural Adjustment and the Environment, Westview Press, Boulder, 1992.

a very brief summary concerning mining in Africa, that the recent policy of the Bank has been to stress that:

- a) Africa's mining potential is much larger than realised;
- b) Africa is relatively unexplored in terms of mineral potential;
- c) African countries can attract a substantially increased share of world mining investment;
- d) African mineral growth has been achieved mainly by the private sector. Future growth will depend on attracting high risk capital from foreign mining companies with the technical and managerial capability to find new deposits and to develop new operations.

In order to do this, countries require, according to one document, a clear mining development policy; a reduced role for state mining companies; and attractive conditions for private investors. As long as state companies dominate the local mining industry and control large tracts of prospective land, new exploration investment will be severely limited.⁹⁶ More specifically, with regard to the role of government, the same document suggests that: "Efficient and rapid mineral development requires governments to allow private companies to take the lead in operating, managing and owning mineral enterprises. Governments can encourage mineral development by restricting their role to regulator and promoter, leaving operations and management to private enterprise."⁹⁷

In another document, it is suggested that the main role of government should be to establish and maintain a supportive "enabling environment" that would allow private

⁹⁶ John Strongman, Principal Minerals Economist, Industry and Mining Division, Industry and Energy Department, Finance and Private Sector Development, World Bank, Strategies to Attract New Investment for African Mining, (Washington, DC, June 1994).p.2.

companies to be competitive in an international market. In its role as regulator, the government should take the initiative for:

- establishing a fair, consistent and efficient legal framework;
- creating and maintaining stable and supportive economic policies;
- promoting a solid technical infrastructure, both locally and on a national level;
- developing appropriate national and local government agencies responsive to the needs of mining enterprises;
- assisting in the development of policies and programmes which will both utilise existing resources and personnel, and eliminate ineffective practices;
- encouraging diversification with the goal of eventually removing government subsidies;
- encouraging foreign investment, and encouraging new foreign skills and structures where appropriate;
- working with local financial institutions to improve access of mining companies to local loan sources; and
- ensuring that investors have equal access to the nation's mineral resources."⁹⁸

This particular conference report comes out clearly against state-owned mining enterprises which it considers have a record of disappointing economic and financial performance. It suggests that governments are adopting the position that the state should not hold any ownership rights in mining companies and should act as neither operator nor employer. State ownership carries, according to the same source, the risk of assuming operating losses or of granting implicit or explicit subsidies and / or preferential treatment

⁹⁷ Ibid.

⁹⁸ World Bank, "International Conference on Development, Environment and Mining" (Washington, DC, June 1-3, 1994). Post Conference Summary. Session 2: Public and Private Sector Roles.p.1.

to mining enterprises. By taxing the company rather than owning it, the government participates in profits without the risk of assuming losses. For these reasons, continues the document, divesture by the state of its ownership interests in mining operations, (privatisation), is being pursued vigorously. Rather than simply restructuring enterprises, privatisation is seen as necessary for:

“unless the ownership structure itself is changed, experience has shown that ‘reformed’ enterprises after a lapse of time once again become subjects of political interference and exhibit many of the old inefficiencies.”⁹⁹

Hence what emerges is a conception of the role of the state which is essentially managerial, technical and instrumentalist: that of providing the conditions to enhance and promote private investment in the mining sector.¹⁰⁰ In this context, it is interesting to summarise very briefly the manner in which the role of the state regarding environmental issues is conceptualised.

According to the experts brought together at the Conference on Development, Environment and Mining in June 1994, government roles in environmental protection are gradually evolving in response to changing perceptions of their involvement in mining operations themselves, and as experience with earlier control systems is evaluated. In particular, the general movement to privatisation of mining operations has resulted in a renewed focus of government on their control function rather than in their capacity as

⁹⁹ Ibid.

¹⁰⁰ This conception of the state implies quite specific functions with regard to the local population. The same report suggests:

“In order to provide a stable atmosphere for mining investment and development, governments cannot ignore public attitudes. Especially in mineral dependent economies, mining issues have the potential to elicit emotional public responses. The government should concentrate on good public relations and not neglect to take into account public perceptions, both positive and negative. Finally, after the transfer of rights or

operators. However, as K. Andersen suggests, there are at least three perceptions as to how this “control function” may be articulated depending on how one conceptualises the role of the state in development and with regard to environmental questions. Concerning the latter, they can be conceived as necessarily touching all aspects of society and therefore having social, cultural, historical and political dimensions. This however, is not the manner in which they are defined in the policy paper by J.Strongman who suggests on the contrary:

“In comparison with such global and national environmental issues as deforestation, desertification and climate change, the effects of mining are generally localized, identifiable, and specific, and adequate technology is available to deal with them.”¹⁰¹

The same paper goes on to identify the following circumscribed negative “technical” impacts:

“But mineral beneficiation and processing can involve the use of toxic materials, and it is essential that satisfactory operating practices are enforced. The necessary measures to safeguard the environment and the health and safety of the population and the workforce can be incorporated in legislation and regulations. New plant and equipment usually provide both improved efficiency and superior environmental performance. Improved physical environments are conducive to improved productivity in the mines and plants and in the community at large.”¹⁰²

ownership is completed, the government must be able to maintain the right economic and social conditions to allow companies and the government to recoup their long-term investments.”Ibid.,p.2.

¹⁰¹ J. Strongman, op.cit., p.10.

¹⁰² Ibid.

In order to bring this about, the same document recommends that governments need to do three things:

- Set appropriate environmental, health and safety standards;
- Establish procedures for reviewing performance and monitoring compliance;
- Ensure that new projects are designed and developed according to acceptable standards.

This rather minimalist view coincides with what is described as an observed shift by governments away from centralized decision-making, control procedures, the use of detailed, prescriptive and inflexible standards and excessive reliance on command and control types of regulations.

With governments withdrawing increasingly from ownership and operation, the role of mining ministries is also changing according to J. Strongman's paper, and this in turn affects their relationship with environmental agencies. Mining ministries are focusing more on overseeing the operations of companies, including environmental performance. Hence the role of the state is seen as that of establishing objectives and standards; of encouraging the establishment of comprehensive environmental management systems and strengthening Environmental Impact Assessment processes (EIA) with subsequent auditing of performance of companies.

Little is said concerning the means of enforcement for the approach assumes on the part of the various entities involved, an implicit convergence of interests and time perspectives within which objectives (whether economic, environmental or social), are to be achieved. According to an alternate interpretation, and as K. Andersen argues, at a minimum, monitoring, inspection and some system of enforcement will be necessary to

ensure policies such as that the “polluter pays.”¹⁰³ Instead of such a regulatory role and if necessary, constraining powers for government, the emphasis of recent documents produced under the auspices of the World Bank suggests the need to: “establish mining as a partnership including local communities, government, mining companies and consultants.”¹⁰⁴

With these general orientations as background, it is interesting to analyse the evolution of Guinean policy with regard to environmental management and more specifically, with regard to the mining sector in the 1990’s.

D. The 1994 Plan National d’Action Environnementale.

The new PNAE was published in September 1994 not even a year after the release of the first PNAE of December 1993. In very important ways, the second Plan was to represent a break with the ideas contained in the first one.¹⁰⁵ One noteworthy example is the explanation which the 1994 document was to give for the origins of environmental degradation. These were attributed to two main internal weaknesses:

1. The insufficient performance of the agricultural system (extensive cultivation, erosion, etc.);
2. Habits which lead to the over-exploitation of natural resources (the use of fire to hunt, over-cutting of forests, etc.).¹⁰⁶

¹⁰³ K. Andersen, *op.cit.*, p.26.

¹⁰⁴ International Conference on Development, Environment and Mining, *op.cit.*, Session 3, Government Roles in Environmental Protection, p.1.

¹⁰⁵ Interestingly, in the references included in the Background and Preparatory Studies to the 1994 PNAE, (Annex 4), no mention at all is made to the 1993 PNAE which was a far more elaborated document (330 pages as opposed to 54 pages plus annexes). It is also interesting to note in the introductory summary to the 1994 PNAE, a considerable number of references to the important role played by the help of foreign experts in finally completing this document or with regard to their future support for activities in this area.

¹⁰⁶ République de Guinée, Plan National d’Action pour l’Environnement, PNUD/UNSO/GUI/90/X02, (Parc Scientifique Agropolis, Montpellier), September 1994. Résumé, p.i.

This illustrates a central point which has been dealt with more extensively by J.Clapp: “ Much of the recent literature on Africa’s environmental crisis today focuses almost exclusively on internal dimensions, such as the self-perpetuating cycle between environmental degradation and domestic policies, population growth, and poverty.”¹⁰⁷

For reasons which we shall examine below, the 1994 PNAE is very reserved concerning the negative impacts of industry or mining on the environment and consequently, the chief factor presented as the agent of environmental degradation is demographic growth. In fact, the chapter concerning the “Objectives and Strategies”, one may read: “ Durant les trois dernières décennies, la croissance démographique a été à l’origine de la quasi-totalité des problèmes environnementaux.”¹⁰⁸ (“For the last three decades, demographic growth has been at the origin of almost all environmental problems.” My translation.)

While population growth has certainly placed pressure on the country’s resources, as has been pointed out elsewhere, population pressure must be reexamined in the context of a complex and dynamic set of factors and not in isolation if lasting solutions are to be found. Interestingly, the 1993 PNAE had argued that it was difficult to show a direct link between an increase in population size and growing environmental degradation. In the 1994 document, such a perspective seems to have been set aside because the analyses concerning the environment appear to have been subordinated to strategies favouring the pursuit of a particular notion of economic growth. The objective of linear, quantifiable growth (although without specification as to growth of what or for the benefit of whom), is put forward as the paramount solution to all other developmental objectives and

¹⁰⁷ J. Clapp, “Global Economic Factors in Africa’s Environmental Crisis,” op.cit., p.29.

therefore, the positive contribution of activities in the industrial and mining sectors should not be questioned on the grounds that they might cause pollution:

“Le même constat est à faire pour l’industrie et les mines, secteur auquel il n’est pas question de renoncer sous prétexte de pollution.”¹⁰⁹

As will be seen, what is proposed therefore, is not a change in present patterns of growth, but certain “corrective measures” which are presented as rectifying past management errors. Before developing the question of proposed strategies, it is useful to note the manner in which the 1994 PNAE presents industrial pollution and more specifically that from mining.

Two brief paragraphs are devoted to this subject. In the first of these, having referred to the dust from alumina production at Friguia, discussion on the whole subject is concluded rapidly by a statement to the effect that after dust pollution reached exceptionally high levels during dry season in the 1980’s, the problem of emissions from Friguia has in large part been resolved by a dust control system in the company’s port loading activities.¹¹⁰

This conclusion, although seriously put in question by alternative sources such as NorWatch, as mentioned above, is nevertheless very much in line with the positive presentation of the mining sector contained in the 1994 PNAE, which suggests in its summary introduction concerning environmental considerations, that the country is

¹⁰⁸ PNAE, 1994, op.cit., p.40.

¹⁰⁹ PNAE, 1994, op.cit., p.iii.

¹¹⁰ PNAE, 1994, op.cit., p.21.

blessed with exemplary development in the mining sector (“un développement minier exemplaire”).¹¹¹

In contrast to the 1993 PNAE which put forward a broad perspective in which development and environment were presented as conceptually very much interconnected, in the 1994 document, rather than involving socio-economic and political dimensions, environmental protection is seen essentially as a technical problem. Consequently, “The PNAE must correct the management errors.”¹¹²

Given the fact that the origins of environmental problems are attributed essentially to poverty and lack of economic growth, the 1994 PNAE goes on to suggest that the solutions lie on the one hand, with technical progress, and on the other, with economic liberalisation: “which provides a real possibility for exchange and access to factors of production and market products, as well as lasting disenclavement.”¹¹³ In the country’s move towards greater economic liberalisation as of 1985, the first priority according to this document, has been the withdrawal of the state from the productive sector. Subsequently, continues the same source, the reforms introduced in the economic field have been carried further and extended to the social sector where this will involve: “a desire to decentralize choices and responsibilities for initiatives.”¹¹⁴ In the absence of an overall development plan, the general orientation of state policy is summarized by the following objectives:

- sustained economic growth;
- a struggle against poverty and correcting inequalities;

¹¹¹ PNAE, 1994, *op.cit.*, p.i.

¹¹² PNAE, 1994, *op.cit.*, p.iv.

¹¹³ PNAE, 1994, *op.cit.*, p.i.

- the development of commercial capacity and diversification of exports;
- local development and decentralised planning;
- state disengagement;
- sustainable development.¹¹⁵

As with economic development, the PNAE 1994 proposes a minimalist and managerialist view of the state in the area of environmental policy. More specifically, it is recommended in the measures prescribed that it be private operators who should intervene.¹¹⁶ The role of the public sector is to orient, to encourage and to stimulate partnership agreements with entrepreneurs of the private sector, as well as to draw up regulations and to see to their implementation. The relevant texts are considered to have been promulgated, notably with the “Code sur la protection et la mise en valeur de l’environnement” and the Mining Code which calls for the rehabilitation of sites in order to renew with their potential for agricultural production or forestry.

According to the 1994 PNAE therefore, the necessary legislation exists. What is lacking or the reason for the absence of implementation is seen a technical question: “des textes d’application font encore défaut pour que cette législation soit appliquée.”¹¹⁷

To conclude therefore, there is a recognition on the part of the 1994 PNAE of the need for action on the part of the state with regard to environmental questions. This role however, is regulatory and technical, one of bringing in complementary legislation, ensuring that texts are compatible and enforced. Little or nothing however, is specified

¹¹⁴ PNAE, 1994, op.cit., p.38.

¹¹⁵ Ibid.

¹¹⁶ Ibid., p.22.

concerning controlling the application and carrying out of sanctions to permit enforcement if necessary.

Beyond a segmented view of the nature of environmental problems which are considered as distinct rather than as an inseparable component of development, environmental management appears to come down, in the last instance, according to the 1994 PNAE, essentially to a technical question of drawing up and seeing to the application of rules which are to be implemented by private operators. Consequently, in the environmental strategy proposed by this document, there are five large programmes, each corresponding to a particular area of activity or “target groups” : a rural programme; an urban programme; a coastal and maritime programme; a cultural and societal programme; a programme in support of the public services in charge of the environment.¹¹⁸ In Chapter 3 of the 1994 PNAE which describes the specific programmes which make up the Plan, there is no mention made of the industrial and mining sectors. The one oblique reference to this area of activity is in itself surprising for it is found in the programme in support of public services responsible for the environment and notably, the Direction Nationale de l’Environnement (DNE). One would have thought that it was the role of the DNE to support and implement the PNAE and not the reverse as suggested here. Moreover, the reference contained here is not to an on-going broad function of monitoring industrial impacts but to a much more limited role concerning the “Prevention of major industrial risks.”¹¹⁹ Here again the responsibility of the public sector is defined with reference to four general objectives: collecting information; monitoring the

¹¹⁷ Ibid.

¹¹⁸ Ibid.,p.iv.

¹¹⁹ Ibid.,p.49.

environment; legislation and regulation; and training of cadres. No mention is made of the eventual need for the public sector to enforce or to sanction if necessary. Moreover, accompanying a rather minimalist and managerialist view of the state, the 1994 PNAE contains a particular notion of public participation. Target populations are to have the role of facilitating the transmission of environmental messages. This suggests a very top down notion of the exercise of political power which depends more on the passive integration of the population to a predefined environmental strategy, rather than their active role in the definition of the objectives of development patterns into which environmental policies will necessarily have to be set. The reasons for this are no doubt numerous and complex. What seems fundamental and in contrast to the 1993 PNAE are the following two points:

1. Environmental policy in the 1994 document is placed in the context of priority given to economic growth strategies which present market forces as capable of resolving environmental problems on condition of the withdrawal of the state. Consequently, this perspective presents the benefits from economic growth as unquestionably superior to the social costs of environmental degradation. It is this framework which helps account for the minimisation of negative impacts from mining and industry which, as we have seen, are in fact quite clearly very real.
2. With the 1994 PNAE, the whole impetus concerning the initiative for policy formulation, monitoring, training and producing information seems to have moved from a situation of a least partial national reappropriation as

conceptualised in the 1993 document, to a situation very much more heavily dependent of external initiatives, expertise, financing and support.¹²⁰

This striking evolution in the history of the key planning document concerning Guinean natural resource policy raises a number of contradictions which we shall explore in the Conclusion.

Conclusion

While a comparative analysis of two planning documents may appear a rather academic exercise, it has the merit of revealing how different theoretical and ideological perspectives give rise to alternative ways of conceptualising the links between the causes of environmental degradation, the relations between developmental and environmental strategies, the disengagement of the state and different policy proposals which result from these different perspectives. In Guinea, the increasing move towards economic liberalisation accompanied by measures of deregulation and privatisation as of the beginning of the 1990's, appears to have been accompanied by an increasingly segmented approach to environmental issues in which these questions were treated in abstraction of overall development patterns. Simultaneously, there seems to have occurred an increasing externalisation of the policy process in the area of natural resources management in which foreign technology, training and finance are called upon to assume a more active and even decisive role. Paralleling this evolution, since the beginning of the 1990's, the responsibility for environmental issues was transferred from its initial central place in the Ministry of Natural Resources, Energy and the Environment, created in March 1986, to an

¹²⁰ "Le PNAE a déjà été retenu pour être le cadre d'intervention de la Banque Mondiale dans ce secteur."

intermediate position when the former Ministry was split at the end of 1994 into the Ministry of Energy and the Environment on the one hand, and the Ministry of Mines and Geology on the other. At the end of 1996, in the context of the further liberalisation of the economy described above, the environmental portfolio was moved once again so that it is now no longer with either Mines, Energy or Natural Resources but the responsibility of the Ministry of Public Works.

In this context, the planning principle for environmental policies put forward by the 1994 PNAE is that this document should serve merely as a vehicle for integrating a number of sectorial plans (Forestry, Equipment in Conakry, Urban Environment of Conakry, etc.) rather than providing a directive thrust for a more developmental approach in which environmental preoccupations are placed at the heart of development strategies as had been attempted in the 1993 PNAE.

In keeping with the call for the withdrawal of the state accompanying greater liberalisation present in the 1994 PNAE, emphasis is placed on the decentralisation of the environmental planning process, initiatives and operators. In the absence of consideration of external factors and pressures which, in alternative approaches, are seen to interact with internal factors to contribute to environmental degradation, priority is given in the 1994 document to building awareness in the rural areas, with the expectation that the best results will be achieved through the initiatives of local village communities. As for urban communities, beyond building awareness, it is suggested that it is by favouring the use of local budgets that results will best be achieved, illustrating the PNAE's sectoral approach

which focuses on each identified internal target group but in the absence of national norms, financial support or eventual means of enforcement.

In keeping with the recent recommendations put forward by the Bretton Woods Institutions to the effect that Guinea must do more to attract private investment, what is particularly noteworthy is the lack of consideration given to the negative environmental impacts in the industrial and mining sector, and the assumption that any difficulty in these areas should and can be righted by the private operators concerned, through encouragement rather than constraints.

As in the case of more long term economic development, in view of the considerable leverage which the Bretton Woods Institutions and other bilateral financial agencies have come to exercise over the Guinean economy, current approaches and notably policies of state withdrawal and deregulation may very well have equally long-term critical implications for natural resource management. As T. Biersteker has pointed out with regard to more global development concerns:

“Until the Bank and the Fund begin to analyze the ways in which external conditions interact with specific economic reform measures, the severity of the debt crisis and the ‘consensus’ it has generated could be used simply to redirect state intervention in the economy without regard for its developmental consequences (a point some officials in the World Bank and the IMF are beginning to realize).”¹²¹

Paradoxically, the need for a more effective role of the state in Guinean environmental protection has been reaffirmed on numerous occasions in the past. In 1991, concerning the conditions necessary to implement the Biodiversity Action Plan, one

report called for the reinforcement of the state's capacity and efficiency. In this regard, although the Conseil National de l'Environnement (CNE) was created in 1987, it only held its first meeting in 1989. Unfortunately, and for reasons which the Biodiversity Plan chose not to develop, the CNE had not been very operational. Nonetheless, continued the same Plan: "the need for such a Council, if possible under the responsibility of the highest governmental authorities, is increasingly imperative and it would be eminently advisable that measures be taken to permit this as soon as possible."¹²²

As noted in the third part of the paper, the need for political support in order to ensure the respect of environmental norms and regulations was a central and repeated preoccupation of the 1993 PNAE. In stark contrast to this, throughout the 1994 PNAE, there is the assumption that the withdrawal of the state is a necessary condition in order to meet economic objectives¹²³ to which environmental objectives are explicitly subordinated. Of the numerous issues which such a position raises, perhaps the most important is the difficulty of seeing how long-term sustainable growth will be assured in the absence of environmental protection. This is particularly true in the absence of the reappropriation of the policy process, whether concerning economic growth or environmental protection which recent experiences suggest is not what is happening.

As is well known, the strategy in favour of opening the economy further as proposed by the 1995 Mining Code is based on the argument that openness will encourage vigorous competitive markets in which prices rather than social policies will

¹²¹ Thomas Biersteker, "Reducing the Role of the State in the Economy: A Conceptual Exploration of IMF and World Bank Prescriptions," in *International Studies Quarterly*, vol. 34, 1990, p. 489.

¹²² République de Guinée, *Plan d'Action Environnementale (PAE), Plan d'Action Biodiversité*, vol.2, Union Mondiale pour la Nature (UNIN), August 1991,p.30.

¹²³ PNAE 1994, *op.cit.*,p.38.

drive the behaviour of firms and factors of production they employ and so provide an optimal allocation of resources. Realistic sustainable environmental outcomes, continues this mode of reasoning, are most likely to be achieved by privately owned companies acting in response to the pressures of the free market. However, as K. Andersen suggests, it is not sure why this “best environmental practice” works. In other words, self-regulating markets may well depend on quite specific circumstances. Among those proposed, it would seem that the most important would be intense public scrutiny and highly competitive markets, notably in countries which have deposits sufficient in size and grade to attract multinationals. The same author continues:

“The primary challenges for the government, and its regulators, will be to negotiate financial terms and agreements which capture a sufficient share of the rent; to have regulations in place which are fair, appropriate, and consistent; and, if necessary, to have the capacity to enforce agreements and compliance with environmental regulations.”¹²⁴

If developments in the Guinean mining sector since the late 1980’s and early 1990’s reveal one thing it is the country’s difficulty in meeting this primary challenge - negotiating financial terms concerning the conditions of extraction of its key resources, bauxite and alumina, in order to maintain minimally stable, rather than declining export receipts and government revenue from this critical sector. Moreover, in the absence of intense public scrutiny and in the presence of an industrial sector characterised by oligopoly, it is difficult to see how openness, accompanied by state withdrawal, could be claimed to contribute to guaranteeing vigorous competitive markets.

¹²⁴ K. Andersen, op.cit., p.27.

As in the case of poverty reduction, so for environmental protection, appropriate policies depend on developmental strategies which ensure the capacity of the state not only to legislate and regulate, but also to negotiate effectively, to enforce and redistribute and above all, to “make visible a strong and unified political will.”¹²⁵

In the absence of public scrutiny, competitive markets or such a capacity for state intervention, present conceptualisation of Guinean economic growth strategies may well have unfortunate, cumulative and perverse consequences in that they contribute to endangering natural resource endowments, increasing poverty, and hence compromising more sustainable patterns of social and economic development.

¹²⁵ Ibid.,p.28