

► The West African Protected Areas Newsletter



“La lettre des aires protégées en Afrique de l’Ouest”

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The full report will be available in English on www.papaco.org in November

The APAO newsletter speaks of protected areas. It speaks about nature conservation, animals, trees and plants, rangers, and sometimes poachers. It also speaks about environmental education, public awareness, local development, community initiatives, public and private partnerships, NGOs... It speaks of roads to open, bush fires to control, car breakdowns and old equipment to repair. And from time to time, it speaks of success stories... It narrates everything that makes the day to day work of our parks' managers and their partners...

It never speaks of industry.

There is a good reason for this: protected areas still remaining in this part of the world (sometimes only on paper, we must admit) are generally far from urban and production centers; those who were too close were absorbed by human activity long ago, at best turned into parks for public recreation, at worst replaced by buildings, factories or crops.

The mining industry tracks the resource where it is and is thus likely to be the only industry able to go implant itself near or inside a protected area. It means that no PA is completely immune to the risk represented by the mining industry nowadays.

It was quite a marginal phenomenon a decade ago, but it became, due to the astronomical prices of raw materials, a key issue for land use and a major threat to environmental conservation. This is clearly not about to change. Each park or reserve manager should be aware that his worst enemy might be hidden under his feet; it's not the old poacher he has been trying to catch for years anymore, in a quite laughable cat and mouse game. Each Director of National Administration and every government official in charge of the environment should know the risks and understand the power relationships that now exist and which are not objectively in their favor.

To learn more, we have conducted a study with a consultant (M. Yann Itard), to evaluate the situation in different countries in the region and quickly assess the environmental issues that this ongoing evolution means. This work presents the mining sector in general, assesses the regional situation, but also analyzes the conditions in each country in a complete and well documented report.

This is not a partial trial: we all know that we already do and will need increasing amounts of these natural resources and that the nations, and also the people get substantial benefits from the mining industry. However, we also feel the need to know what are the risks associated with this activity and how to reduce them if possible. And who knows, in some cases, we might be able to make the mining industry contribute to the parks' life. Managers, therefore, have to be aware of the ongoing legislation, have to learn their role, their mission, have to make sure that extraction and conservation will rhyme a little better.

Finally, reading this study will show you a mixed picture putting the best alongside the worst. However, unlike many other threats to the parks, this one is on a scale and an unprecedented level. It exceeds by far our response capacity, it is being decided or discussed without our participation, it relies on stakeholders unknown to us ... If we do not consider this threat in our work field, we run the risk of losing everything. We must therefore ensure that the future cohabitation will build on progresses, not conflicts...

This study intends to launch the debate ... and these pages will only give you a brief excerpt...

Enjoy the reading!

The Mining Industry in West Africa: evolution and impact on nature conservation

The interaction between the extractive industries sector and that of nature conservation are covered in this study from three different angles:

- The actual impact of mining activities (whether within or outside protected areas),
- Environmental management of these impacts through EIS,
- Implications of spatial proximity of extractive industries and protected areas for nature conservation: regulatory approach and mapping approach.

To do this, all available mining and environmental data were brought together in a database and geographical information system. These are data from, in particular, WWF, the World Database on Protected Areas (WDPA), protected area management evaluations carried out by IUCN PAPACO, data on birdlife from IBA (important Birds Areas), those from the World Resources Institute (WRI) and publications of NGOs, scientific institutions and international institutions as regards biodiversity aspects. For the mining sector, the main data used are national mining inventories, mining permit maps (mining cadastre), geographical summaries and economic data from EITI (Extractive Industry Transparency Initiative) reports.

1) THE MINING CONTEXT

The term “extractive industries”, covers diverse activities that have very different impacts in environmental and economic terms. To monitor regulations in all the countries, the sector can be divided into three categories:

1. Oil Industry, governed by an oil code, which is always separate from the mining code,
2. Quarries (materials for construction, metallurgy, as well as products for cultivation, substances used in the ceramics industry and other similar substances with the exception of phosphates, nitrates, alkaline salts and other salts).
3. Mining sector itself, covering all other substances.

The following categories are usually identified in the mining sector:

1. Artisanal mining, mostly for gold and diamonds,
2. Semi-industrial mines or “small-scale mines”: many countries have attempted to develop this type of mining activity, both to try to structure artisanal activities into small operations and to open the sector up to national investment.
3. Industrial mines, within which the following can be distinguished from an economic and environmental point of view:
 - a. Precious metals and stones (gold, diamonds): ores are exploited at low concentrations (around a few grams to a few tens of grams per tonne), and processed on-site. While there are no cases yet of exploitation, rare earth elements and associated metals (Nb, Ta, Li etc.) are classified in this category. Uranium is also one of the substances exploited at very low content levels (a few ‰). For all these operations, almost all the rocks excavated remain on site.
 - b. “Heavy metals” (iron, bauxite, manganese): ores with high concentrations (several tens of %) are transported as they are (or after minimal enrichment on site), to a mining port or, if necessary, to an industrial zone where they are transformed. Exploitation requires specific transport infrastructure (trains and mining ports).
 - c. Other substances, in between the first two, which, in West Africa concern mainly phosphate (concentrations between 20 and 30% are exploited, either being transported or processed on site). Base metals (copper, lead, zinc) are also in this intermediary group, despite being exploited at lower concentrations, around several percent. There is currently a copper mine (associated with gold) in Akjoujt, Mauritania, and a zinc exploration project in Burkina Faso (Perkoa deposit).

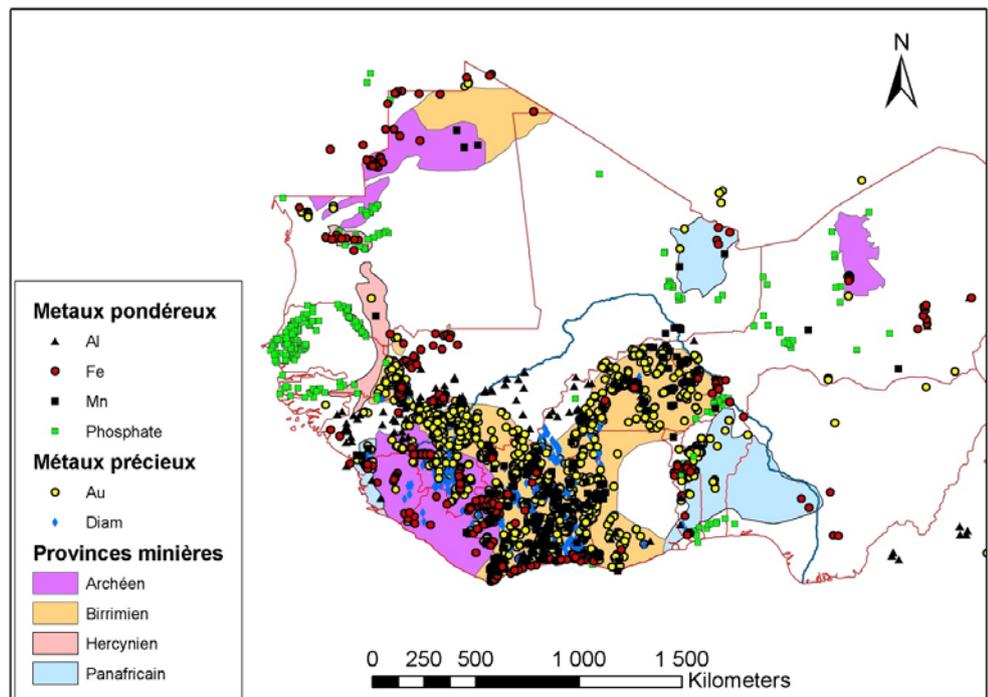


Fig. 1: distribution of a few types of mineralisation depending on the geological substratum.

Petrol and phosphates are found in sedimentary basins, while gold, diamonds and most iron ore are found in ancient basement areas, as shown in Figure 1. Bauxite can be found in both basement and basin zones.

The area with the highest mining potential is therefore that of **Burkina Faso – Ghana – Côte d'Ivoire – Guinea – Liberia – Sierra Leone¹** and the **Mali – Guinea and Mali – Senegal borders**. This is partially shown by national coverage in mining permits (Table 1).

These figures, although unfortunately not among the indicators used by organisations such as the World Bank, speak for themselves in terms of mining pressure on the environment. When more than 60% of the national territory is taken up with mining activities, this leaves little room for conservation areas...

Country	Surface Area km ²	Surface area covered by mining permits	% of the country covered by mining permits	Comments
Burkina Faso	274 200	80 260	29	
Ghana	238 540	62 720	27	
Guinea	245 860	155 260	63	
Liberia	97 754	47 710	48	Approximation
Mali	1 241 238	172 233	14	
Mauritania	1 027 000	120 247	12	Excluding iron ore permits
Senegal	196 720	25 000	8	
Sierra Leone	71 710	12 173	17	Approximation
Togo	56 785	6 994	12	

Table 1: Surface areas covered by mining permits (actual surface area corrected for overlap) in a few countries.

Gold is undoubtedly the largest mineral resource in West Africa. This has been known for many years and since the 1980s has attracted considerable investment followed by several economic discoveries. Artisanal gold mining is still prevalent today and provides livelihoods for several hundred thousand people in Mali, Burkina Faso, Côte d'Ivoire and Guinea.

The other substances exploited, besides construction and metallurgy materials are mainly diamonds (Liberia and Guinea), iron ore (Mauritania and Guinea), bauxite (Guinea), phosphate (Senegal and Togo) and uranium (Niger). Base metal mining is not very developed, apart from the copper in Akjoujt in Mauritania and the zinc project in Burkina Faso.

For several years now, even if there are no concrete results yet, certain mining companies in West Africa have been turning to other substances: manganese, lithium and zircon. One of the obstacles encountered by mining companies is the lack of infrastructure, particularly for substances like manganese, iron ore or bauxite, which can only be transported by train to mineral ports. Transport costs are the main factor holding back the development of many known deposits.



An artisanal gold mining site in a national reserve

In the coming years, it is highly probable that iron ore, bauxite and manganese mines will be extended, and that niobium, lithium, tantalum and even platinum mines will appear. The field of solid fuels could also emerge in the near future, both to reduce countries' dependency on oil and to reduce the pressure on woodlands (the main domestic fuel outside of large agglomerations remains, by far, wood and charcoal). Senegal is studying the exploitation of peat from coastal zones (mainly around Dakar and along the coast between Dakar and St. Louis) as a substitute for firewood and Niger, in the context of the WAEMU PDER programme (development of renewable energies), has carried out feasibility studies on "charcoal briquettes" as a domestic fuel.

In the geographical context of the current study, the following classifications can be considered:

1. Oil producing countries (with mines): Nigeria (10th largest global producer), Mauritania, Côte d'Ivoire, Chad, Ghana since late 2010 and Niger (underway). La Sierra Leone would be a small producer.
2. Mining countries (without oil): Mali, Burkina, Togo, Senegal, Liberia
3. Non-mining countries: Guinea-Bissau, Benin

¹ The data concerning Liberia and Sierra Leone are incomplete, due to a lack of information.

	Year	Contribution of mining sector to GNP	Contribution of mining sector to export income	Contribution of the oil sector to export income
Burkina	2006	0.7%		
	2009	2.8%	41%	
Mali	2006	15%	70%	
Ghana	2006	12%		
	2005		35.1%	
Guinea	2004		74%	
	2005		86%	
Togo	2008	4.8%		
Maurit.	2006		25%	58%
Niger	2008	15%		

Table 2: Macro-economic contribution of the mining sector

In Niger for instance, the uranium sector represented 82% and 84% of State mining revenues respectively in 2005 and 2006. Gold, held by the company SML (*Société des mines de Liptako*) only represents 15% and 12% for these same two years. The main mining company is AREVA, with a turnover of €9 104 million in 2010, in other words 2.5 times the GNP of Niger.

All mining codes are based on the same single principle: mineral substances are Government property, which can, through a mining permit, concede exploration and/or exploitation rights to a private company. The trend observed for the past ten years is the setting up of inter-ministerial commissions involving the Ministry of Mines, of the Environment, of Land Planning, Agriculture and the Budget, to arbitrate on mining permit requests. Among other things, and in theory, this helps to better take into account protected areas in the attribution of mining permits.

The impacts of extractive industries on conservation areas must be envisaged according to two very different aspects:

1. Either it concerns legal activities, authorised in compliance with national regulations and validated by the national authorities,
2. Or it concerns illegal, undeclared activities. These activities mainly concern artisanal gold mining, diamond mining and certain quarries (sand and gravel in particular).

As does any industrial activity, the extractive industry has impacts on the environment. These impacts are usually anticipated through environmental impact studies, which have been included in all mining codes of the sub-region for several years now. Depending on the country and the size of the mine, these can be either short impact sheets or full impact studies. Whatever the form, these documents must be validated by the national authorities (environmental clearance) before the permit can be attributed.

Furthermore, all national legislation allows for areas where mining activities are prohibited, in particular

protected areas. This may be formally written in law or, in certain cases, the different competent authorities must confer to exclude a given zone. Total reserves or national parks are, according to environmental law, zones where industrial activity is prohibited.

The impacts should therefore usually be known and managed as well as possible from the outset of mining projects. Therefore, any serious damage to the environment may be due to:

1. Problems in permit attribution (permits attributed when the impact study should have prevented its attribution),
2. Unrealistic Impact study (effects minimised), which should not have received its environmental clearance,
3. Failure by the operator to comply with the environmental management plan and/or mining activity control faults,
4. Accidents, such as rupture of a dyke, which are not foreseen or provided for in the feasibility study or environmental impact study. This is the aspect most dreaded by local communities, particularly following the accidents of Baia Mare (Romania 2000) and Aznacollar (Spain 1998).

Specifically regarding protected areas, environmental impacts can be seen in the following cases:

1. Permits attributed within the scope of a protected area,
2. Permit attributed on the border of a protected area but underestimation of the environmental impacts or poor management of mining activities,
3. Normal operation of mining activities on the border of a protected area but the protected area is too sensitive or does not have a suitable buffer zone.

2) PROTECTED AREAS AND BIODIVERSITY

West Africa can be divided into five main bioclimatic zones which are, from North to South:

- Sahara zone (North Mali and North Mauritania)
- Sahel zone
- Sudanese zone (Acacia Savannah)
- Forest-Savannah mosaic
- Forest zone, known as Guinean zone, in which certain specific mountain zones can be found.

The tropical Guinean forest (which encompasses a large part of the coasts of Guinea, Sierra Leone, Liberia, Côte d'Ivoire and Ghana, certain continental forests such as the Fouta-Djalon in Guinea and some landscapes of Togo and Benin) is recognised as being one of the most important areas of biodiversity ("biodiversity hotspot") in the world.

Various international or national studies have identified important areas for biodiversity: around thirty are in the

Guinean forest zone, other rarer ones are in Savannah areas or the Sahel region. Regardless of their legal status (protected, about to become protected or not protected), these areas were taken into account in this study to estimate the sensitivity of the zone to potential mining impacts.

252 IBAs (Important Bird Areas) have been identified in the area covered by this study, the majority of which are located in the coastal countries, but some are to be found right up to the north of Mali and Mauritania.

Each country has its own regulations in terms of protected areas, sometimes using different terms. The following terms will be used here:

- National park: total flora and fauna reserves, in which only controlled tourism activities are permitted.
- Total or partial wildlife reserves: areas to protect wildlife in general or certain specific species. Hunting, pastoral activities and wood cutting are regulated in these reserves.
- Classified forests or protected forests: they represent the largest number of protected areas in the study. Many of them date back to the 1930s or 50s, but the texts on protection or classification are not always accessible. Depending on the case, agriculture, pastoral activities, wood cutting etc. can be prohibited or controlled.
- Sylvo-pastoral areas: areas aiming at the rational use of resources to ensure their renewal. These are areas where pastoral activities are authorised but the clearing or cutting down of trees are not. They are intended rather to maintain woody vegetation than to protect specific species.

In the light of this myriad of terms, it would be better to use the IUCN management categories, to characterise each area so that the rules applicable to it are better understood (in particular for mining industry stakeholders). Unfortunately, the countries in the region have not yet undertaken this process, despite it being widely promoted by IUCN PAPACO.

Depending on the country, these different areas can also be governed by different regulatory texts: forest code, wildlife management code, hunting code, environment code. As a general rule, these texts give priority to wildlife and forest protection over the protection of arid ecosystems.

3) EXTRACTIVE INDUSTRIES AND PROTECTED AREAS

In the self-evaluations of the risks and threats facing protected areas made by protected area managers (data from the IUCN studies carried out in recent years and available on line at www.papaco.org), it can be seen that 25% of protected areas are concerned by extractive

industries. Other pressures and threats highlighted are poaching, over-grazing and bush fires.

In order to obtain a more consistent and objective vision of the impacts and threats posed by the extractive industries on protected areas, three geographical approaches were taken, on different scales: one was an overall approach (analysis of the distribution of the main mining basins in relation to priority biodiversity areas), the second was national, by studying the overlap of mining permits with protected areas and the third was on the scale of each protected area by calculating a level of risk as a function of the presence of exploration zones, deposits, or operations, weighted by the distance to protected areas, by the probability of a mine opening and by the level of danger specific to each type of exploitation (simplified risk analysis).

All these approaches suffer from the same limitation, the heterogeneity of the data, whether mining or environmental, means that the results cannot be widely extrapolated.

On the national scale, the two “black marks” are the weakness of the regulatory protection of protected areas in Mauritania and the failure to take into account protected areas in the attribution of mining permits in Liberia (Table 3 below).

Poor	Mediocre	Sufficient	Good	Excellent
N.A: not applicable, N.D: not documented				
	Regulatory Protection of PAs	Consideration of PAs for attribution of mining permits	Threats on the main protected areas	Final Score
Burkina Faso				
Côte d'Ivoire		N.D.		
Ghana				
Guinea				
Guinea-Bissau	N.D	N.A.		
Mali				
Liberia				
Mauritania				
Senegal				
Sierra Leone				
Chad		N.D		?
Togo				

Table 3: Country classification attempt according to the consideration of protected areas in mining industry management (the oil component was not considered).

The simplified risk analysis highlights the industrial and artisanal exploitation of gold as the main threat to protected areas in Burkina Faso, followed by the presence of oil fields in Senegal and Guinea Bissau. The

phosphate and manganese exploitations are the next biggest threat in Mali, Senegal, Guinea Bissau and Togo. As the size of the deposits was not taken into account in this simplified risk analysis, the Monts Nimba (Guinea), considered as one of the most important biodiversity areas in the region, only come after these elements, although the mining threat there is enormous, as the entire Monts Nimba constitutes an iron ore deposit.



Artisanal gold mining activity in a national park

4) GAPS, PROBLEMS AND OPPORTUNITIES FOR IMPROVEMENT

In brief, the problems highlighted in the study can be divided into three different levels:

1. Lack of environmental and mining infrastructure and lack of national planning for optimising national land use.
 - a. On the environmental level
 - i. Difficulty in obtaining the perimeters of protected areas and the texts creating them (legal status)
 - ii. Very few strategic data (flora, fauna and ecosystem inventories). The few data available only concern a few protected areas and are rarely complete.
 - b. On the mining level: maps of mining permits are generally available with the exception of permits associated with quarries, but there is only rarely a national plan to promote mineral resources. The creation of a “mining observatory” at national level or, even better, at a supra-national level (WAEMU/ECOWAS) would enable better visibility of the sector.
2. Regulatory difficulties
 - a. Overlapping of the different regulations (environment, forest, hunting, mining) in particular as regards right of usage and environmental obligations,
 - b. Confusion among land rights, forest rights and mining rights, which are special dispensations of land rights,
 - c. Status of protected areas is not always clear as to which activities are authorised,

d. Oil prospecting is not restricted by the presence of protected areas.

3. Institutional difficulties and governance problems
 - a. Poor functioning of inter-ministerial commissions responsible for attributing mining permits,
 - b. Several structures are in charge of protected areas and they are often inefficient,
 - c. Lack of synergy between staff in charge of mining control and water and forestry agents,
 - d. Under-representation of civil society during impact studies.

There is also the problem of uncontrolled artisanal operations. Many projects and studies have looked at this issue, all the countries have sought solutions but the results fall below expectations. The tradition of artisanal gold mining, poverty and the hope of making a fortune are stronger than all regulations, expulsions and other measures taken by the forces of law and order. It would perhaps be necessary to focus all efforts on sensitive environmental zones.

Again in brief, the main areas for action to enable the mining sector to develop in harmony with the environment (protected areas) are the following:

1. Clarify the status of protected areas with regard to the exploitation of resources and clearly define the activities that are prohibited or permitted: indeed, many of the problems arise because the status of certain protected areas is unclear.
2. Take strong action on Environmental Impact Studies: the actions can be led at three levels:
 - a. Make environmental evaluation procedures systematic for all permit requests (mines and quarries), according to an evaluation level hierarchy in line with the risks created by the mining activities.
 - b. Ensure the impact studies specifically address mining particularities. This requires specialists in mining environmental issues and maybe specific technical sector guides to be published.
 - c. Strengthen aspects linked to public consultation, by setting up a network of associations that could have access to experts on different topics.
3. Specify strategic development plans and maybe create zones where mining exploration is prohibited: mineral resources belong in essence to the Government, and the latter has every latitude to specify areas for mining and others where it is forbidden, at least for a certain duration. This real strategy of land optimisation could include wider deliberation on a West African scale: what are the advantages in developing a given deposit while resources of quality or that are accessible more easily (or at least while incurring less environmental damage) exist in a neighbouring country? In this case, inter-Government compensation mechanisms need to be invented.

4. Adapt sector codes and in particular the mining code, in order to clarify environmental obligations: sector codes can only impose specific constraints in the context of generic constraints imposed by the environment code.

It would be worthwhile in particular to have an environment code that sets the basic principles of protected area conservation, principles that are currently dispersed among the forest codes, hunting codes and wildlife codes, which predate environment codes.



Gold mining...

In the mining codes, it would be appropriate to specify at least that:

a. Mining permits of any type can be obtained freely throughout the country outside protected areas, agglomerations etc.

b. When a promoter wishes to lead activities of whatever type within a protected area defined in the environment code, they should submit a detailed project for approval by the council of ministers which is dependent on the signing of a mining and environmental development agreement, along with guarantee bonds for the environmental obligations according to the different project phases. Depending on the specific nature of the zone, areas where mining is prohibited could be defined within the mining permit area in order to protect a particularly important ecosystem.

5. Improve baseline knowledge of biodiversity by:

- Carrying out strategic environmental evaluations of the main mining basins,
- Review of the different environmental studies already carried out in a given sector (because many data exist but are forgotten!).

6. Strengthen environmental control before, during and after the mining project, with agents competent in mining, forestry and the environment.

7. Clarify tax issues relating to mining permits: the taxes should be strictly defined in the mining code, however, a by-law can plan a certain distribution of mining revenues ("equalisation" fund in Senegal for instance), particularly to help strengthen mining and environmental control in order to enable real and independent control of mining installations.

For more information:
www.papaco.org,
 under the heading "Our Studies"
 (English version to be posted in November)

A new study translated!

Please note that our study on "Big game hunting in West Africa and its contribution to conservation" is now available in English on www.papaco.org

The link is:
<http://www.papaco.org/etude/Etude%20chasse%20anglais.pdf>

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