URANIUM DEPOSIT EXPLOITATION PROJECT OF THE *RESEARCH PERMIT "ADRAR EMOLES 3*" (AGADEZ REGION, NIGER)

BIODIVERSITY MANAGEMENT PLAN

March 2022

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INTRODUCTION

As part of the update of the Environmental and Social Impact Assessment (ESIA) of the Uranium Deposit Exploitation Project of the Adrar Emoles research permit, an important component was devoted to biodiversity.

Thus, the related study made it possible to provide clear and scientific information on biodiversity and wildlife habitats through an inventory of plant and animal species in the project area and the determination of the protection status of these species in accordance with the IUCN classification.

After this assessment, it was necessary, given the potential negative impacts that the project will have on biodiversity, to develop this Management Plan in order to highlight the activities that are the source of Impacts on biodiversity, the potential negative impacts, the measures to mitigate or compensate for them as well as the institutions responsible for implementing them. in implementation and monitoring control.

This report , which constitutes the said plan , is structured around the following points:

- Brief presentation of the Project;
- Roles of biodiversity;
- Project activities sources of impacts on biodiversity;
- Impacts of the project on biodiversity and measures;
- Implementation plan of the measures;
- Institutional actors for the implementation of the measures;
- Conclusion.

1. BRIEF PRESENTATION OF THE PROJECT

The Company Global Atomic Corporation, a Canadian company, which has been conducting mining research in Niger since 2007, is considering the exploitation of the uranium deposit that it discovered in the "Adrar Emoles 3" research permit.

The area of the operating permit, object of this project covers an area of 25.01 km² and is located in the Rural Commune of Tchirozérine (Department of Tchirozérine, Region of Agadez.

The geographic coordinates (Latitude/Longitude, ADINDAN – Clarke 1880) of the tops of the permit perimeter are given in Table 1 below. Figure 1 illustrates this on a topographical background.

Table 1 : Coordinates of the peaks of the perimeter of operation

Point	Longitude	Latitude
A	7° 39' 59, 8''	17° 50' 08''
B	7° 42' 50''	17° 50' 08''
C	7° 42' 50''	17° 47' 26''
D	7° 39' 59, 8''	17° 47' 26''

1.1. Project Objectives

The general objective of the project is the exploitation of the uranium deposit discovered in the "Adrar Emoles 3" research permit.

The specific objectives are:

- Build and install permanent surface infrastructures (life base, buildings including administrative and technical blocks, sanitary facilities, water and electricity networks, basins, various workshops and garages, shops and warehouses of various products and equipment, etc.);
- Build the underground mine (access ramp (tunnel), galleries, shafts/ventilation holes) as well as all the installations associated with it (garage, workshops, crushing device, various cables, signals, instructions, etc.);
- Build the ore processing plant and the various support services (administrative and technical blocks, workshops, garage, warehouses, various networks, contact for the production of sulfuric acid, hydraulic works, worms, different input storage areas, etc.);
- Process the ore to obtain uranate, feed it and transport it to potential outlets;
- Create temporary and permanent jobs and contribute to the improvement of people's living conditions;
- Contribute significantly to the improvement of tax revenues at local, regional and national levels as well as to socio-economic development through investments in various sectors;
- Redevelop all the sites operated when the project closes.

1.2. Expected results

The main expected results of the project implementation are:

- permanent surface infrastructures (life base, buildings including administrative and technical blocks, sanitary facilities, water and electricity networks, basins, various workshops and garages, shops and warehouses of various products and equipment, waste rock and residue deposit areas, etc.) are built and/or installed;
- the underground mine (access ramp (tunnel), galleries, shafts/ventilation holes) as well as all the installations associated with it (garage, workshops, crushing device, various cables, signaling, instructions, etc.) are built and/or installed;
- the ore processing plant and the various support services (administrative and technical blocks, workshops, garage, warehouse, various networks, contact

for the production of sulfuric acid, hydraulic works, pours, pours, different input storage areas, etc.) are built;

- the ore extracted is processed, the uranate obtained swollen and transported to potential outlets;
- temporary and permanent jobs are created and the living conditions of the people of the area are improved;
- a significant contribution to the improvement of tax revenues at local, regional and national levels as well as to socio-economic development through investments in various sectors is made;
- all the sites operated are redeveloped when the project closes.

1.3. Description of the deposit

All known uranium deposits in Niger are located in sandstones and conglomerates in the Tim Mersoi Basin. They are all classified as belonging to sedimentary tabular types.

Uranium deposits hosted in sandstone are marked by epigenetic concentrations of uranium in river/lake or deltaic sandstones deposited in fluvial continental environments frequently in transition zones from higher to lower flow regimes, such as along paleo ridges or domes. Roll-front deposits contain impermeable shale or mudstones that cover or underlyze or often separate mineralized sandstone and ensure that fluids move along sandstone bodies.

In sandstone-type deposits, uranium is usually precipitated by oxidizing fluids of reducing agents such as plant matter, amorphous humate, sulphides, iron minerals and hydrocarbons. The oxidation and reduction facies display typical colors and can assist in the selection of exploration targets. Fluid migrations and uranium deposition leave a color change from red hematite (oxidized) to gray-green (reduced). The main uranium minerals in most sandstone-type deposits are uraninite, pitchblende, coffinite

Generally speaking, it can be noted from north to south to east of Niger that uranium mineralization seems to occur in increasingly younger strata. This is most likely a combination of a change in the source areas and the addition of uranium over time as well as the fact that in the south the younger layers are exposed to the surface, which requires deeper and deeper drilling in the southern areas (e.g. for the Carboniferous - aged targets).

The best grade and tonnage of uranium from the Adrar Emoles 3 deposit is found in the sandstones of the Chirezrine 2 formation, the same formation that also contains the large Orano Imouraren deposit, located about 40 km northwest of Adrar Emoles 3.

Unlike carboniferous mineralization in the Arlit region, uranium from the Chirezrine 2 formation appears primarily as hexavalent uranium minerals in an oxidized environment. Uranophane is the most abundant mineral. It may form small aggregates or appear as a continuous coating parallel to stratification. Uranophane is commonly associated with chrysocolla and in small amounts also associated with boltwoodite. Metahuyamunite was also found. Coffinite exists in residual reduced areas, as well as chalcocite and native copper. Pitchblende has been observed in small quantities. This mineralization comes in two main forms: interstitial in sandstones, and massive mineralization associated with sulphides in microcracks with galena and blende.

1.4. Mineral Resource and Reserve Estimate

The mineral resources of the deposit have been estimated according to the proposed method of exploitation which is ***underground mining***. They are summarized in Table 2 below.

Table 2 : Mineral Resource and Reserve Estimates

Cut	Category	Tonnes	eU3O8	Metal content
eU3O8 pm		Mt	Ppm	Mlb
100	Proved	81,6	718	129,1
	Probable	96,1	606	128,4
300	Proved	34,4	1146	109,6
	Probable	37,6	1260	104,6
1000	Proved	9,6	3885	82,1
	Probable	10,2	3308	74,2
2000	Proved	4,6	6624	66,8
	Probable	4,5	5713	56,8
2500	Proved	3,6	7849	61,9
	Probable	3,4	6838	51,4
5000	Proved	1,6	13186	46,8
	Probable	1,6	10805	37,2
10000	Proved	0,6	24401	31,1
	Probable	0,8	14598	25,3
15000	Proved	0,3	34236	24,3
	Probable	0,1	21493	4,0

1.5. Key production data

The main production data of the "Adrar Emoles 3" research permit deposit exploitation project are shown in Table 3 below.

Table 3 : Production Profile

Mine life	Years	12
Total ore production	Million tonnes	4,13
Total plant treatment	Million tonnes	4,03
Total sterile production	Million tonnes	0,99
Cut-off content	Ppm	5396
Global recovery shredder	%	92
Resource consumption	Drinking water	For the record
	Industrial water	55 ^{m3}/h
	Electrical energy	10 MW
	Fuels	2000 l/d
	Treatment reagents	93 t/d
Jobs	Direct	307
	Indirect	500.

The total number of direct and indirect jobs during the operation of the mine will be 307 and 500 respectively. However, it should be noted that during the construction phase of the mine, the project will generate more than 450 direct and indirect jobs.

1.6. Project activities

The main activities that will be implemented as part of the adrar Emoles 3 research permit deposit project are given in Table 4 below.

Table 4 : Project Activities

Project Phases	Activities
Development (Preparation and construction)	- Construction/development of access roads/tracks - Site preparation (stripping or removal of overburden) for the construction of temporary equipment - Installation of temporary infrastructure and equipment that will contribute to the construction of the project (life base to accommodate the staff of the construction companies, material base, etc.) - Exploitation of loans and quarries (sand, gravel, laterite, etc.) - Preparation of facility rights-of-way - Construction/installation of surface structures and equipment (employees' life base, administrative and technical blocks, factory and support services including workshops/garages for maintenance and reconditioning of machinery, boilermaking, pneumatics, etc., input warehouses, contact workshop for the production of sulphuric acid, basins, dikes, boreholes, tailings park, waste treatment facilities, electrical power generation system, etc.) - Construction of the underground mine (ramps, galleries, ventilation holes) and its underground support services (garage, workshops, crushing device, various networks, road signs and lockers, etc.).
Exploitation	- Extraction of ore from the underground mine (drilling, logging by explosive fire, transport of ore to the primary crusher, dayway conveying through a conveyor belt) - Storage of inputs (chemicals including sulphur, hydrocarbons, etc.) - Operation of workshops (maintenance of machinery and equipment, reconditioning of machinery, manufacture of spare parts, etc.) - Ore storage, crushing and conveying to the plant - Plant-level ore processing (crushing, grinding and classification, attack, liquid/solid separation, clarification, precipitation, purification, uranate drying/calcination and runaway) - Storage of ore processing tailings - Loading and shipping uranate - Periodic maintenance work on the plant
Closure	- Dismantling of installations - Site Cleanup - Redevelopment/rehabilitation of sites

1.7. Main infrastructures of the project

The main infrastructures that will be built as part of the project:

- the living base: staff homes, health, social, cultural, educational, electrical, drinking water supply, roads, etc.
- the mining area: access roads to the mine, the all-coming, ore piles, explosives warehouse, mechanical workshops, storage stores, truck loading facilities and other related infrastructure such as internal roads, buildings (administration, changing rooms, etc.) and services.

- the ore processing plant, the contact workshop for the production of sulfuric acid and the solvent extraction process for uranium.
- transportation runways, service corridors, overhead power lines and water pipes.
- Tailings storage facilities and waste rock worms - Residues from the treatment plant will be stored dry in a waste storage facility with a clay coating. Waste rock from the mine will be discharged into waste rock worms.

1.8. Project equipment and materials

The main equipment and materials necessary for the implementation of the project include:

- Bulldozers, Backhoes, Graders, Drills, Trucks, Loaders, Tanker Trucks;
- Crushers, Grinders, Sprayers;
- Injection and extraction pumps;
- Materials and equipment for maintenance and repair;
- Machines for turning parts;
- Welding machines;
- Laboratory materials and equipment;
- Extraction materials and equipment;
- Filtration and washing materials and equipment;
- Purification, drying and smoking materials and equipment;
- Explosives;
- Various spare parts;
- Various consumables;
- Etc.

1.9. Water supply and electricity

The supply of industrial and drinking water will be based on the capture of aquifers identified for this purpose. This is mainly the tablecloth of the geological formation of Teloua and incidentally that of Tchirozérine 2. However, dewatering water from the mine will also be injected into the industrial water pumping circuit.

The hydrogeological programmes carried out on the permit have also highlighted the possibility of exploiting other aquifers such as the Guézouman and the Tarat.

Pumping tests carried out by Global Atomic Corporation on boreholes capturing the Teloua aquifer have yielded flows varying between 15 and 25 ^{m3}/h.

The supply of electricity during the construction phase will be provided by diesel generators, including for water supply systems. Diesel for generators will be stored in a protected area equipped with accidental spill cleaning kits and associated oil/water separators.

In the operation phase, the needs will be met by the SONICHAR network. For this purpose, power lines and the substation will be built.

2. DEFINITION AND ROLES OF BIODIVERSITY

The Convention on Biological Diversity defines biodiversity as follows: "*Variability of living organisms of all origins including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within and between species as well as ecosystem diversity. »*

Biodiversity includes all living organisms and their genetic diversity, a large and complex set of ecosystems and habitats, and the processes that underpin and result from this diversity, such as photosynthesis, food cycles or pollination.

Figure 1 below illustrates the different roles/services (ecosystem services) provided by biodiversity.

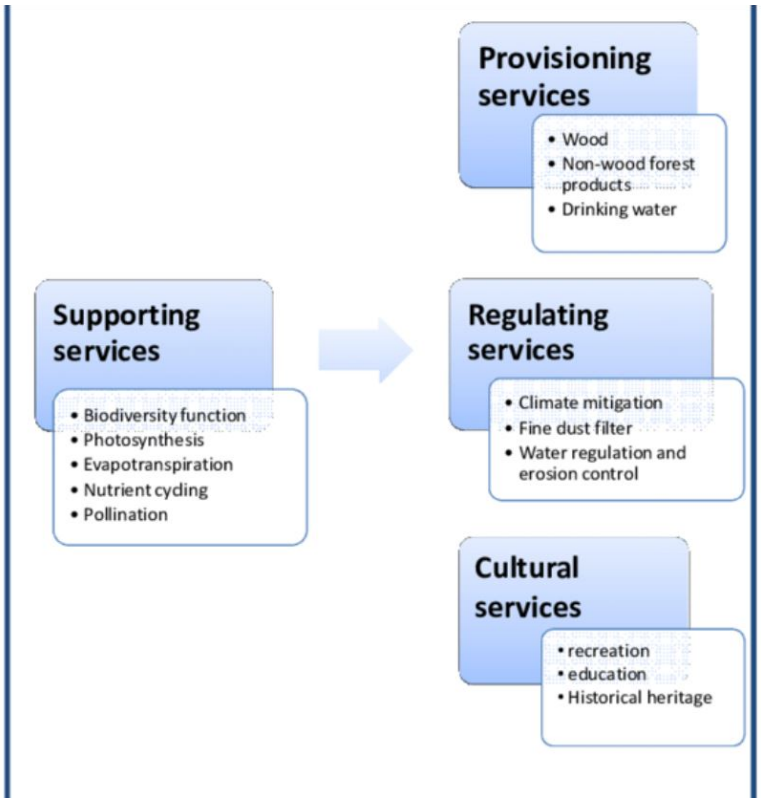


Figure 1 : Biodiversity Services (Ecosystem Services)

As part of the update of the environmental and social impact study of the Adrar Emoles 3 research permit deposit exploitation project, the assessment of ecosystem services was made and concerned the different uses of vegetation and wildlife by local communities. Thus, the following uses have been identified: human food, pharmacopoeia, firewood, timber and service wood, livestock feed, etc.

3. PROJECT ACTIVITIES SOURCES OF IMPACTS ON BIODIVERSITY

The activities that will be implemented under the Adrar Emoles 3 Exploration Permit Deposit Exploitation Project will have potential negative impacts on biodiversity at the

area level. Table 6 below shows the status of its activities according to the different phases of the project.

Table 5 : Matrix of Interrelationships

PROJECT PHASES	ACTIVITIES THAT ARE SOURCES OF IMPACTS
Development (Preparation and construction)	Construction/development of access roads/tracks
	Site preparation of temporary equipment
	Installation of temporary infrastructure and equipment
	Exploitation of loans and quarries (sand, gravel, laterite, etc.)
	Movement of construction machinery and supply of construction materials and materials to the site
	Preparation of rights-of-way for permanent project facilities
	Construction/installation of surface structures and equipment
	Recruitment of the workforce and functioning of the life base
Exploitation	Recruitment of the workforce and operation of the project life bases and subcontractors
	Truck movements for input supply
	Ore processing at the plant level
	Storage of ore processing tailings
	Effluent storage at the basin level
	Construction of new basins
	Exploitation of loans for the needs of the site in laterites and gravel
	Movement of project equipment and subcontractors
Closure	Site redevelopment/rehabilitation
	Gear movements
	Presence of the hand in the context of the work

4. POTENTIAL NEGATIVE IMPACTS OF THE PROJECT ON BIODIVERSITY AND MEASURES

4.1. Impacts of the project on biodiversity

The Adrar Emoles 3 research permit deposit exploitation project will have potential negative impacts on fauna and flora during the different phases of its implementation, namely the Development phase (Preparation and construction), the exploitation phase and the closure phase.

These impacts are summarized in Table 7 below.

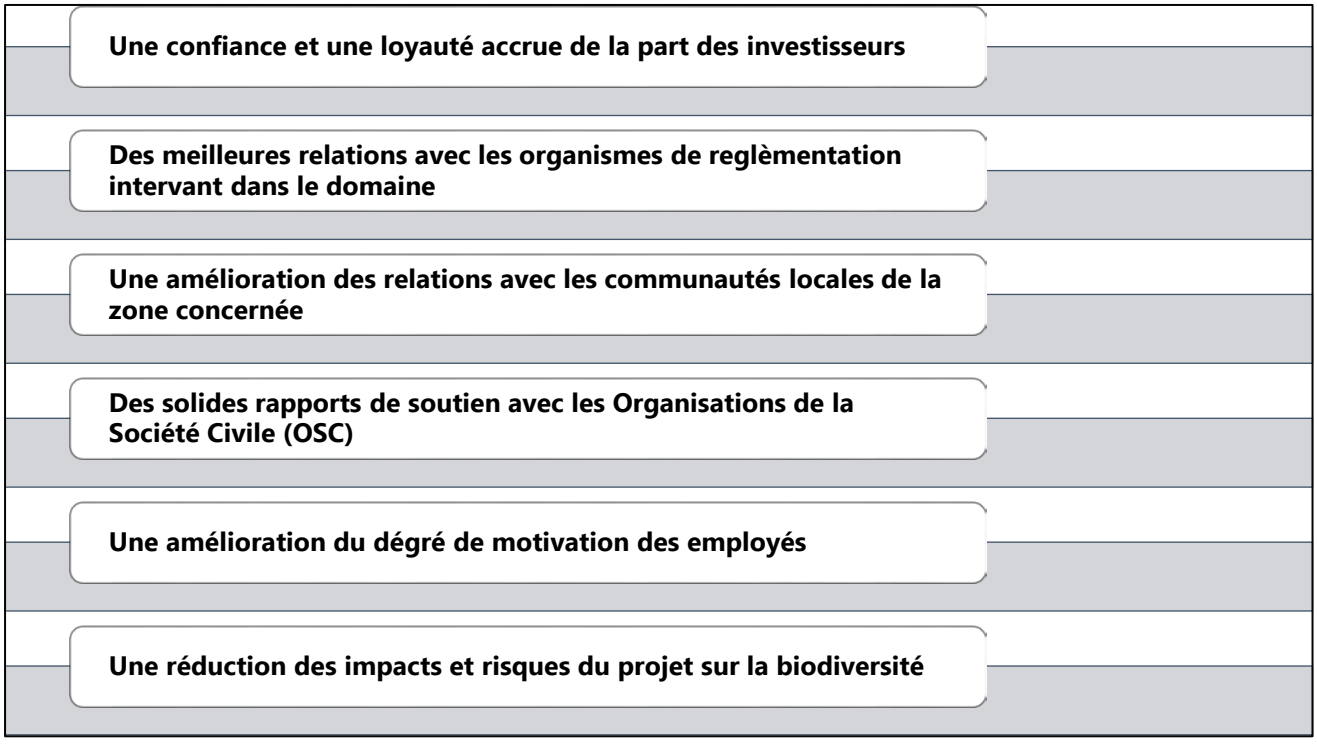
Table 6 : Impacts of the project on biodiversity

PROJECT PHASES	IMPACT COMPONENTS	IMPACTS
Development (Preparation and construction)	Fauna	- Habitat destruction - Disturbance of the tranquility of the fauna
		- Risks of poaching (sampling).
		- Destruction of wildlife following the movement of gear

	Flora	- Destruction of vegetation - Disruption of photosynthesis following pollutant emissions
Exploitation	Fauna	- Destruction of fauna and its habitats (soil and vegetation)
		- Disturbance of the tranquility of the fauna
		- Poaching Risques
		- Risks of falls in the basins and mortality
		- Risk of poisoning of wildlife by the waste that will be generated
	Flora	- Vegetation destruction
		- Disruption of photosynthesis by pollutant emissions
		- Contamination of plants by polluting emissions
Closure	Fauna	- Risk of disturbance of wildlife and wildlife habitat

4.2. Mitigation and compensation measures for impacts

The inclusion of biodiversity in project activities will bring the following benefits to Global Atomic fuels Corporation.



Thus, the measures set out in table 8 below have been proposed.

Table 7 : Mitigation and/or Impact Compensation Measures

PROJECT PHASES	IMPACT COMPONENTS	IMPACTS	MITIGATION AND/OR ENHANCEMENT OF IMPACTS
		- Impacts to protected species, i.e. Lappet-faced vulture, Egyptian vulture, Tawny Eagle	Pre-construction surveys to contribute to final mitigation plans for species Minimise construction footprint and temporary construction areas Minimise construction during seasonal months (i.e. bird breeding seasons) Review design of new powerlines and supporting structures to minimise risk or electrocution or other injury to birds. Monitor and restrict use of poisons or chemicals which are likely to harm birds, especially scavenging birds such as vultures
Development (Preparation and construction)	Fauna	- Destruction of habitats Disturbance of the tranquility of wildlife	Educating workers about the importance of wildlife
			Respect for wildlife habitats during the work
			Remediation of sites disturbed during the work
		- Risks of poaching (sampling).	Prohibition of all forms of poaching
		- Destruction of wildlife following the movement of gear	Driver Awareness
	Flora	- Destruction of vegetation - Disruption of photosynthesis following pollutant emissions	Inventory of trees that will be cut on sites during the work
			Payment of the slaughter tax
			Strict compliance with the rights of way of the works in order to limit the destruction of vegetation
			Sensitization of workers on the need to conserve plant species considered "rare", protected, vulnerable or threatened
			Realization of plantations and sowing of compensation
			Baseline surveys have not confirmed any alien invasive species in the study area. Future surveys will continue to monitor for the presence of alien invasive species.
			Identify eradication and control measures for alien invasive species. A biosecurity plan/ Invasive Species Management Plan will be developed and adhered to by the project to prevent future accidental spread of alien invasive species.
Exploitation	Fauna	- Destruction of fauna and its habitats (soil and vegetation)	Educating workers about the importance of wildlife
			Implementation of CES/DRS actions accompanied by sowing in order to improve the habitat of wildlife
		- Disturbance of the tranquility of the fauna	Regular maintenance of equipment and machinery in accordance with manufacturers'

			recommendations to prevent increases in noise emissions
		- Poaching Risques	Strict ban on poaching
		- Risks of falls in the basins and mortality	Establishment of a passive and active monitoring system for basins
		- Risk of poisoning of wildlife by the waste that will be generated	Development and implementation of a waste and hazardous materials management plan
	Flora	- Vegetation destruction	Identification of trees to be cut and payment of the felling tax
			Sensitization of the workforce extended to local communities on the protection of the environment and the conservation of certain plant species considered "rare", protected, vulnerable or threatened
			Respect for the rights-of-way of the work, particularly in the context of the construction of new basins
			Implementation of land restoration actions
		- Disruption of photosynthesis by pollutant emissions - Contamination of plants by polluting emissions	Regular watering of sites to reduce dust flight
			Regular maintenance of equipment to reduce polluting air emissions
			Regular maintenance of equipment to reduce polluting air emissions
Closure	Fauna	- Risk of disturbance of wildlife and wildlife habitat	Educating workers including drivers about the importance of wildlife protection
			Strict ban on poaching

5. IMPLEMENTATION PLAN FOR THE MEASURES

The following Plan represented in Table 9 will cover the different phases of implementation of the project and will allow biodiversity to be taken into account during the implementation of the activities.

Table 8: Action Implementation Plan

PROJECT PHASES	IMPACT COMPONENTS	IMPACTS	MITIGATION MEASURES AND/OR COMPENSATION FOR IMPACTS	IMPLEMENTING ACTORS	IMPLEMENTATION INDICATORS	COST OF IMPLEMENTATION
Development (Preparation and construction)	Fauna	Habitat destruction Disturbance of wildlife tranquility	Educating workers about the importance of wildlife	GAC	- Number of sessions conducted themes developed - Number of persons concerned	500000
			Respect for wildlife habitats during the work		- Measures taken to mitigate the destruction of wildlife habitats	Clauses approx.
			Remediation of sites disturbed during the work		- Condition of the sites after work	PM
		Risks of poaching (sampling).	Prohibition of all forms of poaching		- Guidelines and measures at the site level to prohibit poaching	Clauses approx.
		Destruction of wildlife following the movement of gear	Driver Awareness		- Number of sessions conducted - Themes developed - Number of persons concerned	500000
	Flora	Destruction of vegetation Disturbance of photosynthesis following polluting emissions	Inventory of trees that will be cut on sites during the work		- Number and types of species identified that may be affected by the work	Clauses approx.
			Payment of the slaughter tax		- Amount of slaughter tax paid	PM
			Strict compliance with the rights of way of the works in order to limit the destruction of vegetation		- Measures taken to ensure compliance with rights-of-way during the work - Scope of the right-of-way of the work	Clauses approx.
			Sensitization of workers on the need to conserve plant species considered "rare", protected, vulnerable or threatened		- Number of sessions conducted - Themes developed - Number of persons concerned	500000
			Realization of plantations and sowing of compensation		- Number and types of seedlings planted	PM
Exploitation	Fauna	Destruction of fauna and its habitats (soil and vegetation)	Educating workers about the importance of wildlife		- Number of sessions conducted - Themes developed - Number of persons concerned	600000
			Implementation of CES/DRS actions accompanied by sowing in order to improve the habitat of wildlife		- Number of ha realized	10000000

		Disturbance of the tranquility of the fauna	Regular maintenance of equipment and machinery in accordance with manufacturers' recommendations to prevent increases in noise emissions		- Frequency of maintenance of the machines	PM
		Poaching Risques	Strict ban on poaching		- Measures taken to ban poaching	Clauses approx.
		Risks of falls in the basins and mortality	Establishment of a passive and active monitoring system for basins		- System set up to ensure the monitoring of basins	PM
		Risk of poisoning of wildlife by the waste that will be generated	Development and implementation of a waste and hazardous materials management plan		- Waste and Hazardous Materials Management Plan developed and implemented	PM
	Flora	Vegetation destruction	Identification of trees to be cut and payment of the felling tax		- Number and types of tree species identified - Amount of slaughter tax paid	PM
			Sensitization of the workforce extended to local communities on the protection of the environment and the conservation of certain plant species considered "rare", protected, vulnerable or threatened		- Number of sessions conducted - Themes developed - Number of persons concerned	2000000
			Respect for the rights-of-way of the work, particularly in the context of the construction of new basins		- Measures taken to respect the rights-of-way of the work	Clauses approx.
			Implementation of land restoration actions		- Number of ha realized	PM
		- Disruption of photosynthesis by pollutant emissions - Contamination of plants by polluting emissions	Regular watering of sites to reduce dust flight		- Frequency of watering	Clauses approx.
			- Regular maintenance of equipment to reduce polluting air emissions		- Frequency of maintenance of the machines	PM
Closure	Fauna	Risk of disturbance of wildlife and wildlife habitat	Educating workers including drivers about the importance of wildlife protection		- Number of sessions conducted - Themes developed - Number of persons concerned	500000
			Strict ban on poaching		- Measures taken to ban poaching	Clauses approx.
TOTAL						**14 600 000**

6. INSTITUTIONAL ACTORS

The different actors who will be involved in the implementation and monitoring of the mitigation and/or compensation measures for the impacts of the project on biodiversity are given in Table 10 below.

Table 10: Institutional actors9

ACTORS	ROLES IN THE IMPLEMENTATION OF THE GGP
- National Environmental Assessment Office (NCEA)	- Environmental monitoring and control of the implementation of biodiversity measures
- Global Atomic Corporation	- Implementation of the measures in accordance with the provisions of the environmental and social specifications
- Service Provider	- Implementation of environmental and social measures to mitigate the impacts of the project on biodiversity in accordance with the terms of the contract with the Société Globale Atomic Fuels Corporation
- Directorate General for Sustainable Development (DGDD)	- It will be involved in the monitoring of environmental control of the implementation of measures with a view to placing particular emphasis on the management of waste that will be generated in such a way as to avoid the potential impacts it may have on biodiversity, particularly wildlife.
- Directorate-General for Water and Forests (DGE/F) - Regional Directorate for the Environment and the Fight against Desertification (DRE/LCD) of Agadez	- They will ensure the preservation of biodiversity within the framework of the activities - Contribute to assessing the implementation of biodiversity measures - Make any proposal to ensure that biodiversity is taken into account in the context of project activities
- Regional Directorate of Mines of Agadez - Communes of Tchirozérine and Dannet - Civil society organizations	- They will provide support in monitoring the implementation of biodiversity measures

CONCLUSION

The Adrar Emoles 3 Research Permit Deposit Exploitation Project is certainly a great opportunity for Niger in general and the region concerned in particular. Its implementation will generate significant positive impacts in terms of job creation, reduction of unemployment, improvement of incomes and tax revenues and consequently of the level of investment in development infrastructure, etc.

On the other hand, this project will generate potential negative impacts, particularly on biological diversity (fauna and flora). Thus, after the assessment of its potential at the level of the area concerned, this Biodiversity Management Plan (BMP) has been developed. It has therefore made it possible to propose the necessary measures that will make it possible to internalize the potential negative impacts that will be generated by the activities to be implemented.

The overall cost for its implementation of this GBP is estimated at *fourteen million six hundred thousand (14,600,000) FCFA.*