Cover Note

Project Name: Conservation and Sustainable Use of Globally Significant Biodiversity in the Tassili and Ahaggar National Parks
Date: 1 October 2001

	Work Program Inclusion	Reference/Note
1. Country Ownership		
• Country Eligibility		
• Country Drivenness	Clear description of project's fit within: • National reports/communications to Conventions • National or sector development plans	 • Paragraph 7 • Paragraph 7, 8, Annex K
• Endorsement	• Endorsement by national operational focal point.	• Annex A
2. Program & Policy Conformity		
• Program Designation & Conformity	• Describe how project objectives are consistent with Operational Program objectives or operational criteria.	• Paragraph 45
• Project Design	Describe: • sector issues, root causes, threats, barriers, etc., affecting global environment. • Project logical framework, including a consistent strategy, goals, objectives, outputs, inputs/activities, measurable performance indicators, risks and assumptions. • Detailed description of goals, objectives, outputs, and related assumptions, risks and performance indicators. • Brief description of proposed project activities, including an explanation how the activities would result in project outputs • Global environmental benefits of the project. • Incremental Cost Estimation based on the project logical framework. • Describe project outputs (and related activities and costs) that result in *global* environmental benefits • Describe project outputs (and related activities and costs) that result in joint *global and national* environmental benefits. • Describe project outputs (and related activities and costs) that result in *national* environmental benefits.	 • Paragraph 4 – 6, 9-11, 13-22, Annex G, Annex K • Paragraph 23-43, Annex C • Annex C • Cover page, 24-26 • Paragraph 24-25 • Annex B • Paragraph 23-43, Annex C • Annex B • Annex B

	Work Program Inclusion	Reference/Note
	• Describe the process used to jointly estimate incremental cost with in-country project partner. • Present the incremental cost estimate. If presented as a range, then a brief explanation of challenges and constraints and how these would be addressed by the time of CEO endorsement.	• Paragraph 23 • Annex B
• Sustainability (including financial sustainability)	• Describe proposed approach to address factors influencing sustainability, within and/or outside the project to deal with these factors.	• Paragraph 50 – 51, Annex I
• Replicability	• Describe the proposed approach to replication (for e.g., dissemination of lessons, training workshops, information exchange, national and regional forum, etc) (could be within project description).	• Paragraphs 23-42
• Stakeholder Involvement	• Describe how stakeholders have been involved in project development. • Describe the approach for stakeholder involvement in further project development and implementation.	• Annex H • Annex H

• Monitoring & Evaluation	• Describe how the project design has incorporated lessons from similar projects in the past.
	• Describe approach for project M&E system, based on the project logical framework, including the following elements:
	  • Specification of indicators for objectives and outputs, including intermediate benchmarks, and means of measurement.
	  • Outline organizational arrangement for implementing M&E.
	  • Indicative total cost of M&E.
		• Paragraphs 55, table 1 – 2
		• Paragraphs 52-55
		• Annex C
		• Paragraph 52-53
		• US $ 863,000

3. Financing		
• Financing Plan	• Estimate total project cost. • Estimate contribution by financing partners. • Propose type of financing instrument.	• US $ 6,270,720 (for phase 1) • US $ 2,550,100 (for phase 1) • grant
• Implementing Agency Fees	• Propose IA fee.	• forthcoming
• Cost-effectiveness	• Estimate cost effectiveness, if feasible. • Describe alternate project approaches considered and discarded.	• Table 1, 2 in main brief • Paragraph 50
4. Institutional Coordination & Support		
IA Coordination and Support • Core commitments & Linkages	Describe how the proposed project is located within the IA's: • Country/regional/global/sector programs. • GEF activities with potential influence on the proposed project (design and implementation).	 • Paragraph 45 • Paragraph 45
• Consultation, Coordination and	• Describe how the proposed project relates to activities of other IAs (and 4 RDBs) in the	• Paragraph 45

	Work Program Inclusion	Reference/Note
Collaboration between IAs, and IAs and EAs, if appropriate.	country/region. • Describe planned/agreed coordination, collaboration between IAs in project implementation.	• Paragraph 45 - 47
5. Response to Reviews		
Council	Respond to Council Comments at pipeline entry.	
Convention Secretariat	Respond to comments from Convention Secretariats.	
GEF Secretariat	Respond to comments from GEFSEC on draft project brief.	
Other IAs and 4 RDBs	Respond to comments from other IAs, 4RDBss on draft project brief.	
STAP	Respond to comments by STAP at work program inclusion	
Review by expert from STAP Roster	Respond to review by expert from STAP roster.	Annex D

PROJECT BRIEF

1. **IDENTIFIERS**

PROJECT NUMBER:	UNDP PIMS No: 970
PROJECT NAME:	**Algeria: Conservation and Sustainable Use of Globally Significant Biodiversity in the Tassili and Ahaggar National Parks**
DURATION:	Eight years, divided into two implementation phases: a first phase of 3 years and a second phase of 5 years.
IMPLEMENTING AGENCY:	UNDP
EXECUTING AGENCY:	UNOPS
REQUESTING COUNTRY:	Algeria
ELIGIBILITY:	CBD ratified on 14 August 1995
GEF FOCAL AREA:	Biodiversity
GEF PROGRAMMING FRAMEWORK:	OP1: Arid and semi-arid zone ecosystems cross cutting with LD

SUMMARY : The Tassili n'Ajjer and Ahaggar National Parks cover a total area of 452,000 km^2, constituting the largest contiguous protected area in Africa and a site of global significance for the conservation of biodiversity in the central Saharan ecosystem. There is now considerable opportunity for achieving cost-effective conservation of the Tassili-Ahaggar region, with low background levels of threat to biota, strong commitment to conservation by national and local government and fast-improving law and order fundamentals in Algeria. However, stakeholder capacity to manage biodiversity is weak creating the danger of biodiversity loss as such risk-prone and fragile environments are uniquely vulnerable to adverse externalities. A comprehensive package of measures is proposed to enable an effective and country-driven conservation initiative that secures global environmental benefits in desert ecosystems. The project will support a process approach, enabling the development of new forms of local governance, based on flexible and plural legal frameworks and institutions that are rooted in an appreciation of the consequences of ecological uncertainty in desert ecosystems. Final outcomes would include permanently staffed, technically autonomous and financially sustainable Protected Area Management Units with clear mandates and appropriate planning, monitoring and law enforcement prerogatives. Collaborative management agreements would involve all key stakeholders in the adaptive, equitable and sustainable use of biodiversity resources and the development of innovative, environmentally-compatible, economic activities which meet livelihood needs. An adaptive management planning process will formalise operational links between the two Protected Area Management Units, integrate PA management with local and national cross-sector development plans and policies and provide a basis for future bio-regional planning and trans-national biodiversity conservation and sustainable use initiatives.

2. COSTS AND FINANCING (US$) :

GEF:	**Phase 1**	3,540,620[1]
	Phase 2	6,249,281
	PDF B	180,000
Sub-Total GEF		*9,969,901*
Co-financing[2]:	**Phase 1**	
	GOA: Full Project	2,340,000
	GOA: PDF B	25,000
	UNDP:	185,100
	Phase 2	
	GOA:	*9,499,291*
	UNDP:	314,900
Sub-Total Co-financing:		*12,364,291*
Total Project Cost:		**US$ 22,334,192**

4. ASSOCIATED FINANCING: Baseline funding is estimated at US$ 548,165,400over 8 years.

5. GEF FOCAL POINT ENDORSEMENT: **Date**:

Mr. Rachid Oulai, GEF Political Focal Point, Ministry of Foreign Affairs	24 Sept. 2001
Mr. Djamal Echirk, GEF, Operational Focal Point, Ministry of Environment	17 Sept. 2001

6. IA CONTACT: Hani Daraghma, GEF Regional Co-ordinator, UNDP Cairo, Egypt

[1] The funding requested in the present proposal covers Phase 1; based on performance of the project, a second submission for Phase 2 may be made to the GEF

[2] Potential co-financing (approximately US$1-2m) is also anticipated from the Governments of France and Switzerland.

List of Acronyms

ANP	Ahaggar National Park
APR	Annual Project Report
BMU	Biodiversity Monitoring Unit
CBD	Convention on Biological Diversity
CM	Collaborative Management
CNOA/RIOD	National Committee of Algerian NGOs, members of the International Network of NGOs for the fight against desertification.
COP	Conference of Parties
CRSTRA	Centre de Recherche Scientifique et Technique sur les Régions Arides
EIA	Environmental Impact Assessment
GEF	Global Environment Facility
GOA	Government of Algeria
IEC	Information, Education, Communication
INRF	Institut national de la recherche forestière
IUCN	The World Conservation Union
M&E	Monitoring & Evaluation
NGO	Non Governmental Organisation
NP	National Park
PA	Protected Area
PAMB	Protected Area Management Board
PAMU	Protected Area Management Unit
PDF	Project Development Fund
TNP	Tassili n'Ajjer National Park
UN	United Nations
UNDP	United Nations Development Programme
UNOPS	United Nations Office for Project Services
WWF	Worldwide Fund for Nature

Project context

1. Environmental context: The Tassili n'Ajjer and Ahaggar National Parks, respectively situated in the wilayas of Illizi and Tamanrasset, south-east Algeria, cover a total area of 452,000 km^2, constituting the largest contiguous protected area in Africa and the second largest in the world.[3] The Tassili n'Ajjer NP was created in 1972, declared as a World Heritage Site in 1982 due to its unique collection of pre-historic rock paintings and engravings. In 1986 it was finally enlarged to its current size of 72,000 km^2 and established as a Biosphere reserve. The adjacent Ahaggar National Park, covering an area of 380,000 km^2 was formally established in 1987. Due to its vast overall size and relative integrity, the Tassili - Ahaggar complex represents a key biodiversity site in the central Saharan ecosystem and - together with the ecologically connected areas of Fezzan, Air-Tenere and Adrar, in neighbouring Libya, Niger and Mali – it potentially constitutes one of the prime sites in the world for desert biome conservation. Geologically, the region is constituted by the huge Tassili plateau, part of the Ordovician and Devonian sandstone layer and the extensive Precambrian crystalline massifs characterising the Ahaggar area. The numerous Ergs were formed from the great lakes, present throughout the region until the end of the Upper Pleistocene. The highly variable topographic profile features mountains with peaks of up to 3,000 m, such as the volcanic Atakor massif and vast plains at heights up to 1,000 – 1,400m. In the deeper valleys and depressions there are many temporary or permanent water-holes or gueltas, three of which are currently being proposed as Ramsar sites.

2. The climate is hyper-arid to sub-arid, characterised by extreme meteorological variability and uncertainty. Mean annual rainfall ranges from 20mm to 100mm, with marked variations across years and seasons. Precipitation may be absent for several years at a given location, while elsewhere sudden rainfall may give rise to localised floods, which may lead in severe cases to drowning of livestock and humans. Mean annual temperature recorded at an altitude of 1,100m is about 20°C but absolute temperatures may range from -7°C to 50°C depending on altitude and season. The ecology of the Tassili-Ahaggar is characterised by the interpenetration of tropical and Mediterranean elements. Following an altitudinal gradient, three vegetational zones are generally recognised: a tropical zone up to approximately 1,800 - 1,900m, a lower Mediterranean zone from 1,900 m to 2,300 - 2,400m and an upper Mediterranean zone from 2,400 to the highest summits.

3. The biodiversity inventory is far from complete and data on the distribution and status of most taxa require urgent updating. Floristic diversity is presently estimated at about 300 species with high levels of endemism, locally reaching up to 50%. Out of the 73 endemic species so far listed, 36 are considered endangered, the most notable being Wild olive (*Olea laperrini*), myrtle (*Myrtus nivellei*) and the palaeo-endemic relict cypress species (*Cupressus dupreziana*), of which only about 240 specimen remain. The 36 or so mammals are mostly typical of arid climates, including 2 nearly extinct species (*Oryx gazella*, *Addax nasomaculatus*) and 7 species of bats. Among the higher mammals, several species are reported as globally threatened or endangered in the IUCN Red Data Book, including Barbary sheep (*Ammotragus lervia*), Slender-horned gazelle (*Gazella*

[3] The size of the Ahaggar National Park is mistakenly reported in the UN list of protected areas as 4,500,000 ha, almost one order of magnitude less than its actual size of 38,000,000 ha.

leptoceros) and, among the carnivores, Fennec fox (*Fennecus zerda*) and the flagship species cheetah (*Acinonyx jubatus*). The avifaunal component includes a total of 134 species of which 14 endemic to the region and 4 species first recorded during the PDF-B. The Tassili-Ahaggar also supports 12 species of reptiles, 2 amphibians and 4 species of fish, relicts of a more humid past climate.

4. Socio-economic context: The two protected areas occupy relatively large portions of the administrative regions in which they are located, with the Tassili n'Ajjer NP covering 25% of the wilaya of Illizi, and the Ahaggar NP covering 68% of the wilaya of Tamanrasset. Human populations are extremely low, with an estimated 34,000 inhabitants in Illizi with a growth rate of 5.33% and 138,000 inhabitants in Tamanrasset with a growth rate of 4.18%. The recorded high growth rates, well above the national average of 2.15%, are mainly due to the immigration of large numbers of Northeners, attracted by new job opportunities in the expanding local administration. An estimated 150,000 people, about 85% of the combined population of the two wilayas, reside within the boundaries of the protected area. Over 90% of the latter are concentrated in urban areas and smaller administrative centres, where water and at least basic services are available. As a result, the ephemeral average population density of 0.2 / km^2 recorded for the two wilayas, drops almost to zero in areas outside urban centres. This vast expanse is only sparsely inhabited by nomadic Tuareg, estimated in the 1998 census at 16,842, about 9.8% of the total population of the two wilayas. The number of nomads is reported to have increased over the last decade, due to the return to a nomadic lifestyle by people previously involved in the tourism sector or employed by public enterprises, which have been downsized or dissolved as part of the structural adjustment programme in Algeria.

5. The total active population for the two wilayas is estimated at 44,818 but no official employment statistics are available and only indirect estimates are possible, based on wilaya tax revenues and data from the chamber of commerce. By far the greatest source of employment is the public administration, which excluding the security services provides 39% of jobs. Commercial activities such as trading, crafts and basic services associated with urban centres occupy about 26% of the workforce. Tourism, formerly an important source of revenue was hard-hit by the political instability of the 1990s and only recently has started to pick-up by providing a few hundred jobs. Industry and mining are virtually absent within the protected areas. Agriculture is limited to about 6,000 ha, less than one third of available cultivable land, accounting for about 15% of those employed. An estimated 6% of the workforce is engaged in the informal economy, particularly trading with Mali and Niger, civil construction and the exploitation of natural resources (e.g. production of fuelwood and charcoal).

6. The remaining 14% of the active workforce practises a highly extensive form of pastoralism, constituting the main economic activity in the areas of interest for conservation. Official livestock estimates for the two wilayas are 51,800 goats, 57,700 sheep and 37,600 camels. However, these statistics are likely to be far from accurate given the inherent difficulties of obtaining data on nomadic communities and the long-standing reticence among pastoralists to disclose such information. For example the Kel Ahaggar, the Tuareg confederation based in the wilaya of Tamanrasset, apparently own another 70,000-80,000 camels, which are almost permanently kept in the richer pastures of the plains of Tamesna, Niger and Adagh des Ifoughas, Mali. Similarly, the Kel Ajjer from the wilaya of Illizi have strong economic links throughout the central Saharan

region, and regular movements have been documented from the Tassili towards the Air-Tenere, Niger and the Fezzan, Lybia. The Tuareg pastoral system is highly specialised with men essentially involved with camel breeding, while women are generally responsible for rearing of goats, sheep and donkeys, as well as tanning and leatherwork and the production of butter and cheese. Highly flexible movement patterns allow the pastoral Tuareg, to respond to fluctuations in rainfall and thus opportunistically track plant development. Accordingly, households or 'tents' may aggregate around key resources such as water-pools or rich localised pastures but dissolve into smaller units or even single 'tents' in order to exploit more extensively distributed resources. At times of environmental stress, a few households still subsist largely on camel's milk, an ancient practice that allows independence from freestanding water for relatively long periods. Under such extreme conditions, diversification is also at a premium and where possible some households establish irrigated gardens. A central event in the calendar of many pastoralists is the annual transhumance towards more productive pastures, in many cases to the south and south east of the Algerian border. These expeditions supplement the pastoral economy through trade with neighbouring markets in Libya, Niger and Mali and by allowing weaker camels to be replaced with animals, which have spent one or more seasons in these richer pastures.

7. Policy context: At the international level, Algeria has entered a number of co-operative agreements and legal obligations affirming its responsibilities for conserving biodiversity, including the World Heritage Convention in 1974, the Ramsar Convention in 1983, the UNESCO Man and the Biosphere Programme in 1991 and the CBD in 1995. The first Algerian forestry code and conservation legislation came into existence in 1912 and on this basis the French administrative authorities set up a series of national parks. Following independence, a legislative framework for biodiversity conservation was established in 1983 as part of the National Strategy for the Conservation of Fauna. Under Law No. 83-05 on the Protection of the Environment enabling the designation of protected areas, ten national parks have so far been declared including the Tassili n'Ajjer NP and the Ahaggar NP. In order to fulfil the provisions of the CBD, a National Biodiversity Strategy and Action Plan was prepared in late 2000 with UNDP/GEF assistance, with the aim to provide an integrated framework for biodiversity conservation based on wide stakeholder consultations. The NBSAP specifically recognised the Tassili n'Ajjer and Ahaggar NPs a national priority for biodiversity conservation and sustainable development. No trans-national biodiversity conservation initiatives have so far been implemented by Algeria, except for some investigations in the 1990s focussing on El Kala NP by GEF-World Bank and adjacent areas in Tunisia.

8. In the project area, the Government has demonstrated increasing attention to conservation issues through successive enlargements of the land under protection - from 3,000 km^2 when the Tassili N'Ajjer was first declared as an historic monument in 1972, to an area of 452,000 km^2 presently covered by the two national parks. In a drive to establish a presence within these protected areas, more than 600 permanent park staff have so far been recruited from the local communities. This very positive dividend for conservation should be viewed against the backdrop of a wider national policy to develop the southern part of the country and assert strong control over its resources and territory. The creation of the independent states of Algeria, Niger and Mali, by limiting to some extent the free mobility of people and goods within these former French territories, fuelled widespread unrest in the Central Saharan region. In neighbouring Niger, during

the early 90s foreign projects were targeted, and the WWF-IUCN initiative in the Air-Ténéré, the last large-scale conservation project in the region, suffered several casualties. In Algeria, state policy towards the Tuareg has aimed at modernisation and assimilation. The Amenukal, traditional chief of the Tuareg, has been appointed to the National Assembly and national institutions have been decentralised through the establishment of the two wilayas. State intervention has also assisted in the gradual sedentarisation of the nomads and the dismantling of unacceptable forms of economic exploitation such as slavery.

9. Institutional context: Overall responsibility for protected areas in Algeria rests with the Ministry of Agriculture except for the Tassili n'Ajjer NP and Ahaggar NP, which were established and have remained under the jurisdiction of the Ministry of Communication and Culture. The recently established Ministry of Environment also shares responsibilities for biodiversity conservation and guidelines defining its future mandate should be developed in the forthcoming National Biodiversity Strategy and Action Plan. Law No. 83-458 stipulates that a resident park director appointed directly by the Minister administers each national park. The park director is required to co-ordinate closely with a cross-sectoral council composed of representatives from all concerned ministries and local authorities but all decisions are ultimately subjected to the approval of the supervising ministry.

10. In the project area, the management of biodiversity has traditionally relied on the highly flexible normative framework provided by Tuareg institutions under the overall authority of the Amenukal. The dominant noble tribes have jurisdiction over large territories, usually divided among vassal tribes and further sub-divided into smaller areas attributed to individual tenants. The latter are vested with one or more - not necessarily exclusive - usufruct rights covering grazing, hunting, agriculture and other forms of biodiversity utilisation. Depending on prevailing ecological conditions, the validity of pre-established rights may temporarily cease and corresponding land rent or taxes may be lifted or renegotiated. Similarly, specific indemnities are determined for different types of violations and flexibly imposed under the jurisdiction of the Amenukal. Usufruct rights are generally transferred to kinsmen following matrilineal tribe membership rules.

11. The non-governmental organisations movement in the domain of natural resources is a recent development in Algeria and few NGOs are actively involved in the conservation sector in the Tassili – Ahaggar region. A notable exception is the Amis du Tassili, founded by a prominent group of archaeologists, naturalists and ex-management staff of the Tassili n'Ajjer NP. This NGO has successfully mobilised public and private funds to support conservation initiatives in the wilaya of Illizi, as well as actively contributing to the current GEF initiative. In the wilaya of Tamanrasset the Association Timidoua, a member of CNOA/RIOD - a national level umbrella group of NGOs active in the environmental field - will soon be receiving support from a UNDP/GEF funded project aiming to develop NGO capacity. The only international NGOs currently active in the Tassili-Ahaggar are IUCN involved with a specialised study on cheetah and WWF, which is leading a status review of wetland sites.

Baseline Course of Action

12. Threats: Extreme dry-land ecosystems, characterised by climatic variability and unpredictability across time and space, are understood to be governed by what has been defined as non-equilibrium dynamics. Accordingly, resource management systems such as those employed by the Tuareg communities, rely on flexible livelihood strategies and institutional arrangements geared to deal with ecological and seasonal uncertainties and the fragile environment. The Tassili-Ahaggar ecosystem is still fairly intact with relatively low levels of threats to biodiversity, largely due to low population density and the inaccessibility of the region. However, such fragile environments are uniquely vulnerable to adverse externalities. The key threats so far identified may be summarised as follows:

- overexploitation of vegetation due to the commercial production of fuel wood and charcoal, the collection of medicinal and forage plants and localised overgrazing ;
- poaching, particularly through indiscriminate hunting of large mammals using vehicles and automatic weapons ;
- habitat modification, mainly due to inadequate waste management and pollution control in urban impact zones, inappropriate agricultural techniques, infrastructure development, and unsustainable tourism practices.

13. Underlying causes: The principal root causes underlying the threats to globally significant biodiversity in the Tassili – Ahaggar region fall into three main categories (see Annex G):

- inadequate institutional capacity and legal framework to implement biodiversity conservation initiatives, enforce legislative and regulatory measures and engage local communities in a collaborative management process ;
- insufficient involvement of local communities in the conservation and sustainable use of biodiversity due to the progressive weakening of traditional governance and economic systems and insufficient private sector diversification into new, environmentally compatible, economic sectors ;
- conservation objectives weakly inscribed on the local development agenda, due to poor awareness about biodiversity resources and their utilisation, the lack of technically sound management plans and ineffective policies for the development of alternative livelihoods.

14. **Baseline programmes:** The baseline course of events is described below. The incremental cost assessment summarises information on baseline costs projected over 8 years (Annex B).

15. Institutional capacity: Despite the priority accorded to conservation in the wilayas of Illizi and Tamanrasset, the existing management structures of the Tassili n'Ajjer NP and Ahaggar NP have very limited effectiveness. This is a reflection of the sheer size of the protected areas as well as a result of the following key institutional constraints: (i) the mainly cultural / archaeological profile of existing management structures; (ii) inadequate legislative framework and weak law-enforcement prerogatives; (iii) lack of biodiversity training among existing personnel; (iv) insufficient number of technical staff specialised in

biodiversity management; (v) insufficient field-presence of staff and absence of basic infrastructure and equipment. In order to secure biodiversity conservation functions within the protected areas, the existing management structures need to be operationalised and reoriented towards biodiversity conservation and management. In the baseline situation this would be unlikely to occur given the significant one-time investments required in institutional capacity building, staff training, infrastructure and equipment.

16. Collaborative management: Traditional resource management systems and institutions featuring the in-built flexibility that helps cope with perennial ecological uncertainties still exist, particularly among the nomadic pastoral Tuareg. However, in many cases they have been devalued or weakened by state policy, or are simply ignored by outsiders because they are not communicated and hence remain unrecognised. On the other hand, rising commercial interests behind the utilisation of certain biodiversity components are undermining the control that local resource users within the Tassili – Ahaggar have over their environments. Many plant species are harvested for productive purposes and, although data on harvest rates are incomplete or not yet available, for some species they are probably already unsustainable.[4] This is clearly the case for large mammals – though hunting pressure on certain species is known to be largely due to outsiders.[5]

17. Current policies under the baseline scenario are typically product-oriented and engineered from the top-down. Such policies are unable to address the resource tenure and usufruct related constraints, which are effectively weakening the long-standing conservation practices of local communities. In order to reverse this trend, substantial policy and legal changes are required. Interventions should be process-oriented, encouraging institutional flexibility and opening the way for co-operation between stakeholders and specialised agencies to fend off external threats to natural resources. Through participatory processes, collaborative management initiatives should lead to devolution and to new forms of plural and negotiated governance, which would ensure the conservation of biodiversity and safeguard the rights and livelihoods of local resource users.

18. Ecotourism: According to government statistics, tourists visiting the Tassili n'Ajjer and Ahaggar national parks in 1992 were estimated at 19,000 but dropped virtually to zero in the following years as Algeria underwent a long period of political instability. Recently tourist numbers have started to rise as law and order fundamentals improve in the

[4] The most common species harvested for fuelwood and charcoal production are *Acacia raddiana*, *Acacia tortilis*, *Calligonum comosum* and *Tamarix spp.* Among the 100 or so active merchants in Tamanrasset current market prices are 450 dinars per fuelwood load and 500 dinars for 50 kg of charcoal. Commercially harvested forage species include *Myrtus nivelli*, *Forga eplants* and *Aristida pungens* or "Drinn". Medicinal species are actively traded as far as Mali and Niger, the most valuable being high altitude endemic species such as *Artemisa judaica*, which is sold for up to 7,500 dinars per gram.

[5] Hunting pressure is threatening the local extinction of cheetah (*Acinonyx jubatus*) and Slender-horned gazelle (*Gazella leptoceros*) as well as severely reducing populations of Barbary sheep (*Ammotragus lervia*) and Dorcas gazelle (*Gazella dorcas*). Ostrich (*Struthio camelus*) and two large mammal species, *Oryx gazella* and *Addax nasomaculatus* are believed to have become extinct.

country. With the possibility of receiving international flights at airports in Djanet and Tamanrasset, the Tassili-Ahaggar region has a high tourism potential and may provide a future gateway to a wider Central Saharan tourist circuit. However, several barriers impede the development of the sector as a conservation compatible livelihood activity: (i) absence of guidelines for environmentally compatible site development and mitigation of adverse ecological impacts; (ii) a lack of visitor management capacities and adequately trained guides; (iii) weak skills at local level and limited sharing mechanisms ensuring maximal benefits to local communities; (iv) inadequate site-infrastructure and interpretation facilities; (v) weak demand-side fundamentals due to poor positioning and marketing of a nature-based tourism product. Under the baseline situation the tourism sector would tend to be managed according to the criteria and commercial interests of external tour operators. The removal of existing barriers would allow conservation objectives to be realised through the development of nature-based tourism as an innovative sector of the local economy allowing flexible exit and re-entry into the pastoral sector.

19. Information, Education, Communication (IEC): No environmentally oriented awareness activities are presently carried out in the region, except for sporadic programmes in the local radio. On the other hand, numerous educationalists serve in primary and secondary schools and a core of professional journalists are active in the local and national press and media. Relatively large urban populations and an average 73% school attendance rate, though below the national average, indicate a sizeable potential target audience for systematic IEC programmes. However, projected baseline investments would occur at a low background level, and need to be intensified in order to stimulate support for biodiversity conservation among civil society, especially where there are tradeoffs with development.

20. Biodiversity Monitoring and Evaluation: Only three institutions are presently collecting longitudinal, biodiversity-related data in the Tassili-Ahaggar region. The National Forestry Research Institute (INRF) is monitoring the relict population of Tarout cypress (*Cupressus dupreziana*) and testing techniques for its reintroduction as well as conducting systematic botanical surveys in an attempt to track major habitat changes. However, the scope of INRF monitoring activities is constrained by a small annual budget, few qualified staff and little in the way of equipment. The Tamanrasset unit of the National Meteorological Office operates a network of 45 automatic weather stations distributed throughout the region. A NOAA remote-sensing unit, deployed since 1991 with British assistance, is being used in collaboration with the University of Reading, UK, for monitoring of ecological conditions in the desert locust recession area. However, the vegetation indices so far developed by this programme are still of limited applicability. The National Research Centre for Arid Regions (CRSTRA), though located outside the two wilayas is active in conducting ecological studies and applied scientific research in the Tassili-Ahaggar region. Aside from the studies on cheetah and wetland sites, carried out with the support of IUCN and WWF respectively, no further investment in targeted research or biodiversity monitoring is foreseen under the baseline scenario.[6] There is an urgent need to build capacity for the establishment of a long-term, "management-driven",

[6] The only standing long-term research agreement involving the national parks, aims at a cultural heritage study conducted since 1994 in collaboration with the Frobenius Institute of Frankfurt, Germany.

monitoring programme-tracking trends in biodiversity resources and their utilisation through site-specific monitoring programmes in each protected area.

21. Management planning: A management plan covering both the natural and cultural resources of the Tassili n'Ajjer NP was produced with UNESCO support in the mid 1980s but so far implementation has been extremely limited. No management plan presently exists for the Ahaggar NP. At wilaya level, activities are mostly programmed and budgeted on a yearly basis and no formal development plans over longer time horizons have yet been formulated. Key projects are often planned directly by central ministries and other national institutions, with apparently little wilaya involvement or foreknowledge. Hence, under the baseline situation there would be limited scope for the integration of conservation objectives into development planning and general environmental management. In order to address this weakness, it is crucial to develop a planning process which relies upon two complementary mechanisms: (i) the elaboration of adaptive management guidelines based on continuous learning and negotiation rather than blueprints or prescriptions, and (ii) the incorporation of these guidelines into a formal management plan integrating biodiversity conservation with wider development planning at wilaya and national levels.

22. Eco-development and sustainable livelihoods: Over the coming 8 years, the baseline scenario would see considerable investment mainly by government, within the two national parks. The vast majority of such investments would be allocated to development rather than environmental management or biodiversity conservation. A sustainable livelihood strategy should be adopted to maximise positive contributions to biodiversity conservation and mitigate any negative impacts. By supporting newly emerging decentralised government bodies and NGOs, planned investments may be reoriented or fine-tuned and additional resources leveraged to improve conservation-specific linkages.

Alternative Course of Action

23. Project preparation: UNDP-GEF and the Government of Algeria have jointly invested in project preparation with resources made available through a PDF-B grant. Under the co-ordination of a cross-sectoral Steering Committee, an initial set of stakeholder consultations was followed by preparatory studies and systematic data collection. A project formulation workshop involving all key stakeholders was held in Tamanrasset during July 2000 and results validated in a national workshop held at Illizi during January 2001.

24. The project aims to protect a representative sample of the biodiversity of the Central Saharan region. This will be achieved through the conservation and sustainable use of globally significant biodiversity in the Tassili N'Ajjer and the Ahaggar National Parks. Given the vastness of the two protected areas and the specificity of desert ecosystems, a mixed strategy will be adopted. In sites of key biodiversity resources, more intensive management will be supported through the clustering of activities while, over the rest of the area, a more extensive form of management will be supported through simplified streams of activity – intervention being limited in some cases to supporting PAMU presence. Priority will also be given to ecological corridors in order to ensure at least stepping-stone connectivity between areas of key resources. This adaptive management strategy, emphasising flexibility and movement, is tailored to the ecological imperatives

of desert ecosystems, as reflected by the survival strategies and movement patterns adopted by both animals and humans in such extreme environments.

25. During the course of the PDF-B, key biodiversity sites in the Tassili-Ahaggar region were assessed as suitable areas for the demonstration of management techniques to be replicated and applied on a wider scale. Six core areas have been identified, collectively covering a total of 45,200 km^2, i.e., 10% of the total area of the combined Tassili and Ahaggar National Parks (see schematic map, Annex E). These areas were identified according to criteria based on (i) global significance of site's biodiversity, in particular species diversity, presence of globally threatened and endemic species and importance for migratory species; (ii) spatial extent and complementarity between globally significant species present within the six areas, and overall integrity of representative habitats of the Tassili-Ahagar ecosystem; (iii) participatory consultations and negotiations with local stakeholder communities; (iv) suitability for the development of demonstration activities that would be applicable to similar dry lands in the central Sahara and elsewhere in the north African region; (v) access to project sites; and (vi) cost effectiveness of proposed interventions. The following is a brief description of the six areas while an indicative list of globally significant species with special reference to their conservation and legal status is given in Annex F.

- The Taessa massif (~600 km^2). A high elevation mountainous area in the Atakor range, situated about 60 km northwest of Tamanrasset, has long been identified as a local biodiversity hotspot, particularly rich in endemic plant species (300 species, 30% of which are endemic and threatened (Ozenda, 1958; Quézel, 1962 and Sahroui 2000). The PDF-B recorded about 44 endemic plant species, all of which are regarded vulnerable, rare or threatened, 23 species of which are included under national protection, while 10 species are only confined to the Lataesa area including *Dianthus crinitus, Silene Kilianii, Erodium meynieri, Pistacia atlantica*, etc. On the wildlife, 23 mammals have previously been recorded in the Taessa area, including the globally thtreatened species of Cheetah-(*Acyonix jubatus*). At present, the site is served by 17 rangers operating from a single outpost.
- The Tefedest massif (~4,800 km^2), situated about 250 km to the north of the Atakor mountain range, characterised by deep valleys and an extensive network of permanent water holes or gueltas. It represents an important refuge for large mammals (21 species) that are nationally protected, of which 3 species are also regarded globally threatened (*Ammotragus lervia*-Audad, *Falco naumanni and Ardea purpurea*). In floristic biodiversity terms, the area is also very significant with 43 endemic species, of which 9 are nationally protected, and 6 species specifically restricted to the Tefedest, while 24 other species are present in one or two more sites. At present the site is served by a total of 25 rangers operating from three outposts.
- The Mouyidir plateau, (~10,000 km^2), is an almost uninhabited region with vegetation localised in deep valleys and floodplains including 42 endemic and threatened species such as the arborescent species of Euphorbia *calyptrata, Euphorbia dracunculoides, Euphorbia balsamifera* (Ozenda, 1958; Quézel, 1962 ; Quézel & Santa, 1962). The Mouyidir plateau has another 5 species that have previously never been recorded anywhere else in the central Saharan ecosystem (*Aristida pallida, Matthiola maroccana, Tribulus ochroleucus, Limoniastrum guyonianum, and*

Pituranthos scoparius var.fallax). In wildlife terms, the site also is a refuge for 20 nationally protected mammal species, of which 5 are globally protected. It is served by 112 rangers, half of which on active duty, operating from five outposts.

- The Serkout region (~25,000 km^2), situated 300 km to the east of Tamanrasset, a vast region straddling at the border of the Ahaggar and Tassili National Parks, is of critical importance for one the last viable populations of North African cheetah (*Acyonix jubatus*) (IUCN, 2000). The Serkout region, according to the reports of the PDF-B team, also has over 35 globally significant plant species, with 2 species occurring no where else in the Sahara and 6 other species regarded as nationally protected. At present the site is served by 56 rangers operating from four outposts in the ANP and about 20 rangers operating from two outposts in the TNP.
- The Meddak plateau (~3,600 km^2), situated in the Tassili National Park, at an altitude ranging between 1,400 and 2,000 metres, has about 23 endemic plant species (four of which are nationally protected) and 13 other mammal species, two of which are globally threatened. One of the significant observations in this plateau is the prime sanctuary for the palaeo-endemic relict cypress species (*Cupressus durpeziana*), with only 230 specimens so far recorded in the area (Abdallah Sakhi, pers. comm.). No outposts have yet been established in this site.
- The erg of Tihoudayene (~1,200 km^2), situated about 300 km northwest of Djanet, is characterised by 19 plant endemic species, 4 species are restricted to this site including important populations of *Calligonum azel, Calligonum calvescens, Pseudorucaria clavata, and Typha elephantina* (Bedrani & Sakhi, 2000). It also has around 15 species of nationally protected mammals and one globally threatened species ((*Ammotragues lervia* – audad or barabary sheep). No outposts have yet been established in this site.

26. A time horizon of eight years has been selected for project implementation with a first, shorter preparatory phase of three years and a longer second phase of five years. The former will be largely devoted to procedures aimed at meeting legal, staff and planning pre-requisites as well as completing baseline studies and establishing a collaborative management framework. The second phase will focus on delivering project final outcomes. A number of benchmarks are built into the log-frame as a means of evaluating project performance before graduation between phases. Seven key outputs are proposed, with the GEF financing the agreed incremental costs of conservation:

[1] Building institutional capacity and development of basic infrastructure.

[2] Implementation of collaborative management agreements involving key stakeholders.

[3] Promotion of environmentally compatible and non-intrusive ecotourism.

[4] Conservation awareness through targeted Information, Education, Communication programmes.

[5] Establishing a biodiversity monitoring system.

[6] Development of management plans based on adaptive management guidelines.

[7] Supporting eco-development and sustainable livelihoods

<u>Output 1.</u> Institutional capacity for field conservation enabled through legal, human resources and infrastructure development.

27. The GEF would provide funds for the amendment, development and enactment of legislation strengthening the institutional capacity of the Tassili n'Ajjer and Ahaggar Protected Area Management Units (PAMUs). The aim is that biodiversity conservation becomes the chief mandate of the PAMU, alongside the preservation of cultural heritage. Effective legal instruments should be put in place for the implementation of this wider mandate based on well-defined planning, monitoring, and law enforcement prerogatives. The principal requirements are that existing legal statutes for the two parks are either revised or superseded by new executive decrees, and that specific bylaws are newly formulated and enacted for each protected area.[7] The final body of texts, by addressing gaps in existing legislation and resolving inter-jurisdictional overlaps, should collectively enable the following: (i) the redefinition of the PAMU mandate, functions and organigram, reflecting the new, biodiversity-related, staff profiles and responsibilities; (ii) innovative legal procedures and allowing the PAMU to enter into effective collaborative management agreements with other parties such as stakeholder communities and the private sector; (iv) clear regulations for the licensing of economic activities and other anthropogenic impacts (including hunting, tourism) within protected areas and standardisation of monitoring, site inspection and environmental auditing protocols; (iv) extension of police powers to selected PAMU staff; (v) institutionalisation of income–generating mechanisms such as visitor and concession fees in order to supplement the PAMU budget and assist in covering the long-term recurrent costs.

28. The development of PAMU human resources will be achieved through three main activity streams. First, by rendering operational the 600 permanent junior staff already on the PAMU payrolls and deployed in the field. The latter, having been recruited from the local communities, generally have detailed knowledge of biodiversity and traditional resource use systems. Training should therefore be mainly on-the-job and concentrate on management methods, monitoring, law enforcement, reporting, and administration. Second, by re-orienting management and technical PAMU staff through the recycling of existing personnel and the recruitment of staff, specialised in biodiversity conservation. Current senior and middle-ranking personnel tend to have reasonable administrative skills but limited technical skills and field experience. Formal and informal training should focus on biodiversity assessment, monitoring and management, as well as participatory and conflict resolution techniques. Finally, strong operational links should be established within the PAMU through decentralisation and redeployment of management and technical staff into the field - towards the sub-headquarters and outposts. The human resources budget would cover the following activities: (i) on-the-job training by 4 specialised trainers operating in the field throughout the project; (ii) semi-annual in-service training workshops to discuss lessons and resolve problems; (iii) recruitment of a further 20 technical and management staff; (iv) study tours to other protected areas in North Africa and the Middle East (4 study tours for 10 participants); (v) participation in regional PA management training programmes (20 participants); (vi) overseas attachments (6 participants for 3 months).

[7] Statute of Tassili n'Ajjer NP, decree N72-168 of 27/7/1972, superseded by decree N. 98-88 dated 21/4/1987. Statute of Ahaggar NP, decree N.87-231 dated 3/11/1987.

29. In order to strengthen PAMU field operations the project will supply basic infrastructure and equipment, financed 34% by the GEF and 66% by the GOA. This would include: (i) completion of Tassili n'Ajjer NP headquarters and construction of headquarters for the Ahaggar NP; (ii) design and construction of 5 sub-headquarters and 63 outposts; (iii) partial delimitation and sign-posting of 3,000 km of tracks; (iv) establishment of a radio-communication system linking the headquarters, sub-headquarters, outposts and mobile units; (v) procurement of vehicles, office equipment and other standard technical and scientific equipment.

30. The recurrent costs of PA operations, including personnel, infrastructure and equipment maintenance - additional to costs, already covered by existing PAMU budgets - will be shared by the GEF and the GOA as follows: year 1, GEF 80% and GOA 20%; years 2-4, GEF 50% and GOA 50%; years 5-6, GEF 30% and GOA 70%; year 7, GEF 10% and GOA 90%; year 8, GOA 100%.

Output 2. Collaborative management of protected areas is operational based on the adaptive, equitable and sustainable use of biodiversity resources.

31. The project will support a process approach, enabling the development of new forms of governance, based on flexible and plural legal frameworks and institutions that are rooted in an appreciation of the consequences of ecological uncertainty in desert ecosystems. Flexible movement, opportunism and responsive livelihood are central to the proposed adaptive management framework, whereas conventional management methods based on parameters such as static carrying capacities and fixed resource units are considered inappropriate in such extreme environments.[8] Ultimately, open-ended informal processes should lead to formal collaborative management agreements and partnerships, reinforced by supportive tenure rights, policies and legislation. Such processes, strongly based on 'learning by doing' and tailored to fit the unique needs and opportunities of different contexts, will be advanced through an interdisciplinary collaborative management (CM) team. The latter will be composed of a technically competent, and dedicated group of professionals including biodiversity and participatory appraisal specialists and experienced facilitators. The CM team will assist PAMU staff with assessing the feasibility of possible partnerships, as well as with the preparation, development and implementation of pilot agreements. The CM team will also provide extensive training for PAMU staff and a selected number of actual or potential stakeholders, as a means of advancing the process towards more complex management agreements and larger areas of application. The GEF will cover the operational costs of fielding the CM team including salaries, per diem and transportation.

32. The following key steps will generally be required for the successful negotiation of collaborative management agreements: (i) identification of territory or set of resources; (ii) evaluation of the range of functions and sustainable uses provided; (iii) stakeholder analysis; (iv) determination of functions, responsibilities, benefits and rights of

[8] For example, in neighbouring Niger, the introduction of additional water points, in the form of government-operated boreholes and concrete-lined open wells, has worked in some areas to the disadvantage of the local Tuareg, by facilitating access to previously excluded Fulani pastoralists; as a result the local Tuareg requested the closure of new water points (Methta et al., 1999).

stakeholders; (v) formulation of management priorities and/or site management plan; (vi) establishment of conflict-resolution procedures for implementing collective decisions; (vii) agreement on specific rules for monitoring, evaluating and reviewing the partnership. Biodiversity conservation and sustainable use objectives should remain central to the establishment of CM agreements. However, the range of possible initiatives, which may be supported by the project, is deliberately left open so that true stakeholder participation and the identification of site-specific solutions are not foreclosed. The consultative process initiated during PDF-B implementation, has so far produced the following non-exhaustive set of proposed guidelines:

- the establishment of concessions over specific territories or resources whereby a limited number of certified local users can extract a limited quantity of fuel wood, medicinal or forage plants for domestic and/or commercial use ;
- development of micro-plans to strengthen protection of key biodiversity resources, such as integrally protected core areas, through improved rangeland and water point management, a compensation scheme for cheetah predation on livestock and enhanced veterinary services ;
- support to micro-enterprises involved with cheese production, leather processing and camel breeding through the removal of barriers such as limited know-how, access to credit and marketing constraints;
- support to local ecotourism and other sustainable livelihood initiatives as discussed under outputs 3 and 7.

33. A key outcome of the CM process will be the creation of conservation-enabling institutions, which confer strong authority and status on legally sanctioned communal natural resource regimes. Different types of property regimes and resource tenure systems co-exist and overlap in the Tassili-Ahaggar region, with more open access being prevalent in drier zones or periods and more exclusive forms of tenure in wetter zones or periods. Hence, the project will support local management committees with robust conflict mediation systems, low transaction costs and rooted in existing social networks, such as those administered by community elders. GEF funds will provide for intra-community forums, bringing together community members and representatives from community-based groups in order to facilitate informal exchanges and resolve outstanding problems. Periodic general meetings of representatives from different management committees will be convened to share management experiences and ensure that management operations are co-ordinated. Selected representatives from local management committees will also be associated as members of the Protected Area Management Board (PAMB), which includes all key stakeholders in the management of the protected areas.

<u>Output 3.</u> Ecotourism is managed to demonstrate innovative, environmentally compatible, economic activities meeting sustainable livelihood needs.

34. In order to demonstrate the function of ecotourism as a conservation enhancing livelihood sector, the GEF will provide funds for the removal of barriers summarised in paragraph 18, by supporting the following main streams of activity: (i) formulate a biodiversity friendly ecotourism plan and best practice guidelines for the development and diversification of ecotourism facilities and services; (ii) sensitise tourism operators,

potential investors and other concerned parties about desert conservation and environmentally sound, sustainable desert tourism; (iii) conduct training programmes for interpretation and guiding services; (iv) provide technical assistance and micro-credits to facilitate local, private sector initiatives in obtaining usufruct rights and leases for the development and operation of ecotourism facilities and services (e.g. eco-centres, crafts, trekking tours, etc.); (v) strengthen the capacity of the PAMU and other regulatory bodies to license ecotourism activities according to best practice guidelines and ensure full compliance with procedures set out in the licences and related EIAs; (vi) design and implement, in collaboration with the private sector and other stakeholders, a comprehensive marketing strategy to promote the Tassili - Ahaggar as a leading ecotourism site in the Central Saharan region.

Output 4. Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation.

35. GEF funds would be drawn upon to formulate and implement a cohesive and finely targeted IEC programme. The main objective would be to stimulate local and national advocacy for biodiversity conservation by raising the level of public awareness and involvement in the conservation and management of the protected areas. The IEC programme should also deliberately influence policy makers and other key players by highlighting the economic significance of the PAs as well as promote the project and supporting institutions through the dissemination of project results. The message to be conveyed - carefully modulated on specific target groups and adapted to the type of media selected - should emphasise the natural and cultural value of the Tassili-Ahaggar and the role of biosphere reserves in demonstrating harmonious relationships between man and the natural environment. The unique cultural vestiges of the region provide a powerful key to the interpretation of its ecology, by vividly describing the process of environmental modification which over 10-15 millennia has transformed a tropical savannah into a desert ecosystem.[9] Sustainable development issues should be consistently incorporated in all formal and non-formal IEC tools in order to introduce the long-term development and conservation issues confronting the future management of the protected areas.

36. A variety of different IEC tools and activities will be required to disseminate the basic message which, according to the profile of different target groups, will include the following non-exhaustive set of key activity bundles: (i) the development of a wide range of field-based environmental education activities and tools targeting primary and secondary school students and complementing formal education programmes; (ii) interpersonal communication tools such as familiarisation tours, thematic workshops,

[9] The most noteworthy pre-historic remains include: rock paintings in the the Plateau of Tasghirt, rock engravings of large fauna (hippopotamus, buffalo, elephant, rhinocerus and giraffe) and of man in the wadi Djerat canyon, rock engravings of the fauna of the Sahara on the Plateau of Dider, stone monuments at Fadnoun, rich archaeological remains in the southern zone, neolithic remains such as sculpture, pottery, grinding implements and enclosure walls as well as material from the lower and middle Paleolithic periods in the Fort Tarat and Djanet regions. A chronological sequence in cave paintings exists, for example those of the Equidian period present stylised figures and frequent scenes of moufflon hunting; the Cameline period with a schematic style incorporating inscriptions in Tifinagh characters, which is the same alphabet as still used by the Tuareg today. Radio-carbon dating has indicated the archaeological remains date from the period 6,000 to 2,000BC.

information portfolios for specialised audiences of decision-makers, educationalists, tourism professionals, environmental NGOs, etc.; (iii) co-ordinated public relations with the press and media ensuring accurate and timely coverage of project activities in national and local TV and radio, and in selected dailies, weeklies and trade magazines, aiming at mass circulation, opinion leading and advertising; (iv) production of high-quality TV documentaries and internet-based products targeting the wider national and international public to support public relations activities, disseminate project results and make available in the public domain information on the protected area and its activities.

Output 5. Monitoring and evaluation of biodiversity resources, their utilisation and management has been tested, and a system is operational.

37. The GEF would provide funds to build the capacity of the PAMUs for systematic monitoring of biodiversity, as a crucial tool supporting the planning and management of the protected area under their mandate. This will be achieved through two main and related streams of activity, based on the establishment of a central Biodiversity Monitoring Unit (BMU) for the Tassili-Ahaggar region and of field units based in PAMU sub-headquarters. The key tasks of the BMU would be the following: (i) collaborate with other agencies and institutions in the design of the monitoring programme, building consensus on monitoring priorities; (ii) arrange for outsourcing of selected components of the programme ensuring full compliance with agreed conditions during implementation; (iii) develop simple participatory methods for data collection by PAMU staff, so that information may be collected by different teams and results compared with confidence; (iv) synthesise data, disseminate results and play an active role in the planning, research and training activities of the PAMUs; (v) ensure that information is shared with all serious stakeholders in Algerian biodiversity conservation.

38. The monitoring programme will concentrate on selected dimensions of the overall system, in an attempt to generate information, which is directly applicable to the PAMU's core business - the planning and management of protected areas. It would be premature to define too specifically the monitoring activities to be undertaken, however, the following indicative list of key activities could be supported:

- Habitat and land use monitoring. Broad-scale habitat and land use patterns will be analysed through remote sensing and ground surveys in order to detect changes in the levels of human-related pressure on areas of key resources and important biological corridors. If necessary, the initial treatment of remote sensed data could be outsourced, but the final output is to be adapted for a PC platform using a user-friendly GIS package and established at PAMU headquarters.
- Species monitoring. It will be most cost-effective to concentrate on a small number of species which are directly related to key management issues due to their economic impact, social importance, or their role as keystone / flagship species (e.g. among the mammals, Barbary sheep, the gazelles and cheetah). Bird checklists will be regularly updated and the seasonal abundance of at least a selection of migratory species and of endemic and threatened species monitored. A selection of key species of reptiles, amphibians and invertebrates will also be monitored as well as a limited number of endemic and/or threatened plant species such as *Olea laperrini* and *Cupressus dupreziana*.

- Monitoring utilisation of biodiversity. In addition to monitoring land use and habitat conversion within human impact zones (see above), participatory monitoring techniques will be employed to track a further set of indicators such as: (i) the number and category of direct and indirect users of biodiversity; (ii) qualitative / quantitative estimates of harvesting pressure and stock depletion rates; (iii) economic benefits from the extraction and utilisation of biodiversity resources and (iv) the risk of loss of biodiversity components.
- Monitoring management of protected areas. The effectiveness of PA management will be monitored through standardised methods of reporting with measurement of achievements against time-bound targets and by employing indicators, which are reflected in the annual work plans for each protected area. The following key areas should be considered: (i) staff performance and welfare; (ii) finance and administration; (iii) effectiveness of management of vehicles, tools and equipment; (iv) conservation and protection activities; (v) estate management; (vi) range and wildlife management; (vii) visitor management; (viii) IEC and extension activities; (ix) implementation of research and monitoring programme.
- Information management. A simple and manageable information system is central to the activities of the BMU in order to co-ordinate the flow of data from direct monitoring as well as the information generated by external specialists and other agencies. The system should provide a framework to organise data and eventually become a source of information to be used in everyday management work. Staff should be trained to input data and encouraged to use the system by maximising user-friendliness, providing good support and generating data sets and reports that contribute to management decisions.

Output 6. Management plans are developed and biodiversity conservation is firmly inscribed on the local development agenda.

39. The GEF will provide funds to develop a prioritised management plan for the Tassili-Ahaggar region, finely adapted to the ecological, social and economic specificity of the two protected areas, including the preparation of recovery plans for target species of plants and animals and incorporating the adaptive management framework underpinning the CM process and derived agreements (output 2). An overarching objective is that management guidelines remain highly flexible, allowing the Protected Area Management Units to strategically adapt their policies. On the other hand, the management plan will formalise operational links between the two PAMUs, integrate PA management with local and national cross-sectoral development plans and policies and provide a basis for future bio-regional planning and trans-national biodiversity conservation and sustainable use initiatives.

40. The proposed timeframe would require the preparation of a first set of guidelines by the end of the first phase of the project, for implementation in the following five years. During the second phase guidelines would be extensively tested and revised and an updated plan would be produced as a final output to cover the five-year period following termination of the project. A non-exhaustive list of key activities supported by GEF funding would include: (i) desktop survey and review of all available information on the

Tassili-Ahaggar region; (ii) field surveys to complete the collection of baseline data on biological resources and their utilisation and including eco-geographic studies targeting key species of plants and animals; (iii) compilation of resource profiles for the PAs, including baseline and thematic maps and technical descriptions generated by the GIS and M&E systems; (iv) participatory planning - initiated through the CM process - based on extensive interaction and negotiations with key stakeholders of the protected areas; (v) preliminary zoning, based on priority management issues identified through stakeholder consultations and complementary information produced by specialist missions and the GIS and M&E systems; (vi) formulation of draft management plan; (vii) regional and national reviews of draft management plan by relevant institutions, government departments and key stakeholders; (viii) completion and official adoption of management plan for implementation.

<u>Output 7.</u> Eco-development and sustainable livelihoods are supported through financial and human resources targeted by government, development agencies and communities.

41. Participatory assessments conducted during the PDF-B underscored the need to address livelihood needs as part of the overall conservation initiative. The multiple livelihood strategies adopted by people living within the protected areas would be upheld while maximising the positive contribution made by biodiversity to livelihood outcomes. A flexible, non-sectoral, sustainable livelihood approach would support newly emerging local government bodies and NGOs stemming from the ongoing twin processes of decentralisation and democratisation. The aim is to open-up the dialogue beyond government, while encouraging both the public and private sectors to innovate and incorporate emerging best practices from biodiversity conservation initiatives. Under the alternative strategy a shift in development priorities would occur, with interventions being modified to address the ultimate causes of biodiversity loss, while additional assistance would be leveraged and activities incompatible with conservation would be restricted. The project will sign memoranda of understanding with partner agencies, establishing a joint programmatic framework for conservation and community development interventions.

42. No funds will be appropriated from GEF except to support limited, incremental, technical assistance inputs. Proposed interventions will be carried out with financing from government and development agencies (see Annex I). Deliverables so far identified include: (i) improved animal husbandry schemes based on goat-fattening[10] and the raising of local chicken varieties; (ii) support to extensive pastoral management through the establishment of water collecting ponds in improved rangelands and strengthening of local tenure arrangements, rangeland custodianship and management practices; (iii) pilot scheme to plant, produce and market economically valuable medicinal plants; (iv) promotion of energy alternatives by demonstrating low-cost, off-grid technologies and providing micro-credits for the distribution of appliances such as solar stoves and ovens;

[10] This scheme will demonstrate with local Bedouin communities a pastoral production system in areas where no globally significant biodiversity is present to alleviate the threat of overgrazing while at the same time maintain sustainable alternative livelihoods of targeted Tuarege families. It is a successful lesson adopted from the GEF/UNDP Dana-Azraq project in Jordan, which was undertaken and successfully completed by the Royal Society for the Conservation of Nature (RSCN).

(v) contribution to land rehabilitation schemes based on the planting of native tree species; (vi) support to the diversification of ecotourism services based on the development of traditional handicrafts and of camel tours for visitors.

43. End of project situation : The following key results are expected to have been achieved by the end of the project:

- Permanently staffed, technically autonomous and financially sustainable Protected Area Management Units are established in the Tassili n'Ajjer NP and the Ahaggar NP, with clear mandates and appropriate capacity to ensure the long-term protection and sustainable use of biodiversity, based on well-defined planning, monitoring and law enforcement prerogatives
- The protected areas are collaboratively managed, by involving all key stakeholders in the adaptive, equitable and sustainable use of biodiversity resources and the development of innovative, environmentally compatible, economic activities which meet livelihood needs.
- The protected areas are firmly inscribed as the operational framework for local planning and development activities and recognised as leading sites in the Central Saharan region to catalyse the implementation of future trans-national biodiversity conservation and sustainable use initiatives.

44. Project beneficiaries: Global communities would benefit from option, existence, recreational and indirect use values secured by removing threats to the ecological integrity of globally significant protected areas. Similarly, future generations of Algerians will benefit from the foreclosure of threat to an important natural heritage at a time when the country was unable to unilaterally shoulder the incremental costs of its management. At the local level, communities will be direct beneficiaries of a strategy that links conservation activities with the development of sustainable livelihoods. The project will enhance the menu of future livelihood options removing barriers to the development of ecotourism and sustaining productive and consumptive use values for economically important biological resources. Secured funding for park infrastructure and operations would benefit the national and local level protected area management institutions, communities and other stakeholders in conservation outcomes, by increasing their capacity to manage protected areas and protect biodiversity.

45. Eligibility for GEF financing: The project falls within the strategic considerations of the GEF focal area on biodiversity and the GEF Operational Programme dealing with Arid and Semiarid Zone Ecosystems and is also of direct relevance to the issue of land degradation, as stipulated in Article 3 of the GEF instrument. The project would be consistent with COP4 guidance on employing an ecosystem approach in promoting conservation and sustainable use across vast, arid and vulnerable landscapes. In particular, it satisfies eligibility criteria by: (i) invoking a highly participatory management strategy; (ii) being country-driven, initiated by Algerian authorities in accordance with their policy commitments; (iii) securing co-financing to share the costs of executing conservation measures and achieving the sustainable development baseline; and (iv) providing for long-term financial and institutional sustainability. The GEF would finance the agreed incremental costs of attaining biodiversity conservation objectives. The

Government of Algeria ratified the Convention on Biological Diversity in 1995, and the project meets CBD objectives in several ways, fulfilling requirements contained within Articles 6 (General Measures for Conservation and Sustainable Use), 7 (Identification and Monitoring), 8 (In Situ Conservation), 10 (Sustainable Use Management), 13 (Conservation Awareness), and 17 (Information Exchange).

Linkage with other GEF Initiatives: The project fits in the context of UNDP's Country Co-operation Framework, which includes biodiversity conservation as a key thematic focal area. Current GEF initiatives for which complementarities would be optimised and strong communications maintained during implementation, include: (i) the biodiversity enabling project leading to national Biodiversity Strategy and Action Plan for Algeria; (ii) the biodiversity conservation and sustainable natural resource management project which aims to promote the participation of civil society through the partnership with the CNOA-RIOD network of associations; (iii) the regional project on participatory management of plant genetic resources in the oases of the Maghreb; and (iv) the FP Transhumance for Biodiversity Conservation in the Southern High Atlas. In addition, the project will make all efforts to benefit from the World Bank/GEF experiences in El-Kala National Park, Algeria and the Natural Resources Management in Aïr Ténéré Reserve, Niger for which a PDF-B is currently underway.

Project implementation

46. Execution arrangements: On behalf of the Government of Algeria and UNDP, the UN Office for Project Services (UNOPS) will execute the project with support from the UNDP sub-office in Algiers. UNDP will be responsible for (i) monitoring project activities, evaluating impacts, and reporting on progress implementation to the GEF; (ii) ensuring smooth functioning of the project Steering Committee; and (iii) ensuring effective and timely programming of activities. UNOPS will assume the following functions: (i) procurement of non- expendable equipment, consultants, subcontracts and other inputs; (ii) co-ordination of independent evaluations; (iii) management of project accounts; and (iv) arranging for audits of expenditures in compliance with UN system procedures.

47. Implementation arrangements: The project would be implemented through a National Project Coordinator, two National Field Directors (all under the backstopping of an international Chief Technical Adviser), respectively the managers of the Tassili n'Ajjer NP and Ahaggar NP, with administrative support personnel and short-term technical experts. A cross-sectoral Steering Committee would be established to oversee project operations, approve annual work-plans and progress reports and ensure implementation of the recommendations of independent evaluations. It is anticipated that local NGOs having a well-proven track record in biodiversity conservation will be engaged to support selected activities, so as to build advocacy functions and a long-term twinning relationship with the PAMUs.

Financial arrangements

48. Incremental costs: Agreed incremental costs to be financed by the GEF amount to US$ 9,789,900 excluding preparatory assistance. Co-financing amounting to US$ 12,364,291 has been leveraged from the GOA, reflecting the fact that the project will contribute to generate domestic in addition to global benefits.

Budget:

Project Outputs	Phase 1 (US$)		Phase 2 (US$)	
	GEF	GOA-UNDP	GEF	GOA-UNDP
Institutional capacity building	1,248,900	1,500,000	2,532,848	5,919,582
Collaborative management	902,100	150,000	1,293,848	250,000
Ecotourism barrier removal	387,840	90,000	781,811	157,273
Information, Education, Communication	425,820		670,831	
Biodiversity monitoring and evaluation	288,980	60,000	428,734	85,454
Management planning	215,980	40,000	357,622	100,000
Eco-development & sustainable livelihoods	71,000	685,100[1]	183,587	3,301,882[2]
Total Full Project	3,540,620	2,525,100	6,249,281	9,814,191
Sub Total: Full Project	GEF: US$ 9,789,901 GOA: US$ 12,339,291 (of which UNDP funds $ 500,000)			
Project Preparation	GEF US$ 180,000 GOA US$ 25,000			
GRAND TOTAL (PHASE 1 + PHASE 2+ PREPARATION)	US$ 22,334,192			

[1] Of which $185,100 is funded by UNDP; [2] of which $314,900 is funded by UNDP

49. Cost-effectiveness: Total costs compare favourably with other projects supporting the management of protected areas, especially in consideration of the vast size of the Tassili n'Ajjer NP and the Ahaggar NP. By vesting ownership of the conservation initiative in the hands of local communities, the long-term responsibility of conservation will be shared and the costs of policing activities accordingly reduced thus ensuring that project investments are cost-effective.

Sustainability of project results

50. Project risks : The assumptions that underpin project design are listed in the log frame. Six key risks have been identified. These are listed below, with a description of abatement measures.

Risk	Rating	Abatement Measure
Legal modifications are not officially approved or enacted in a timely fashion	M	Considerable financial and technical resources have been foreseen during the first phase to address this key issue. A positive outcome should be considered as a prerequisite for graduating from the first to the second phase of the project.
Re-orientation of PAMU towards biodiversity conservation is hampered or delayed	H	The project will be backstopped by an international Chief Technical Adviser with long-term experience in the conservation of biodiversity and the management of protected areas.
Management staff are not willing to be redeployed to		This risk can be reduced through careful selection of personnel and the timely realisation of infrastructure and

Risk	Rating	Abatement Measure
sub-headquarters and outposts	H	procurement of key equipment for decentralised PAMU units.
Government is unwilling to implement the new participatory management methods and share responsibilities and accountability	M	A key element of project design is systematic consultation with local communities. The Collaborative Management framework will ensure that community perspectives are addressed. A finely targeted IEC strategy will assist in reaching agreement between stakeholders and local and national government institutions.
Law and order fundamentals foreclose the development of ecotourism activities and Algeria does not become an attractive market for international tourism	L	The risk is mitigated by the fact that ecotourism is supported as one of several sustainable livelihood options for the diversification of the local economy. In addition this sector is usually associated with flexible exit and re-entry into the pastoral economy.
Co-financing is not assured and baseline sustainable development outcomes are not realised	M	The Steering Committee will facilitate joint programming between GEF inputs and those financed by other financiers; co-financing commitments would be confirmed prior to and as a pre-condition for commencement of each project phase.

Risk rating L = low; M = medium; H = high

51. Sustainability: Project design makes strong provision for ensuring institutional and financial sustainability. Considerable capacity building efforts will target the PAMUs as key institutions where the GOA already permanently employs the vast majority of personnel. The recurrent costs of PA operations, including personnel, infrastructure and equipment maintenance - additional to costs, already covered by existing PAMU budgets - will be initially shared with GEF but, by the end of the project period, will be shouldered entirely by the GOA. The sustainability of collaborative management and livelihood initiatives targeting the private sector and local communities will be assured by the removal of barriers presently limiting the development of economically sound, income-generating activities with conservation-specific linkages.

Monitoring & Evaluation

52. At the beginning of implementation, the project would develop analytical and sampling tools for field monitoring activities as part of the establishment of the biodiversity monitoring system foreseen under output 5. The logical framework provides a set of performance indicators to measure the delivery of outputs, and impact indicators, measuring attainment of project objectives. These indicators will be further refined following in-depth biological and social assessments scheduled under output 6. The project will be implemented through an adaptive management framework that feeds monitoring data into operational planning, thus enabling management strategies and activities to be flexibly adjusted. Monitoring would involve both government and local communities, in order to facilitate inputs from all stakeholders and assess whether new priorities require a shift in the types of interventions receiving funding.

53. The project coordinator and sub-contractors will prepare quarterly activity and expenditure reports for submission to UNOPS, and as a basis for disbursing funds. A more detailed Annual Project Report (APR) will be prepared prior to the end of the fourth quarter of each year, clearly describing substantive progress in implementation and providing a detailed financial report. The APR would inform decision-making by the project Steering Committee and include a numerical rating of project performance, an assessment of major achievements, issues, problems, shortcomings, and lessons learned, and a financial statement. The APR will be used as an information document for the scheduled annual Tripartite Reviews. UNDP will draw on this information in reporting to the GEF on the status of the project, during the regular annual Project Implementation Review (PIR). Every year also, the project will be subject to an official audit to be conducted by an independent auditor.

54. A mandatory independent evaluation will occur prior to graduation from the first to the second phase of the project and results will be critical for the release of further funds. Based on project performance, a second submission for phase 2 may be made to the GEF. Benchmarks are listed in the logical framework including (i) revision of PAMU mandate and organigram; (ii) legal procedures for establishing CM agreements, licensing of economic activities and extension of police powers approved; (iii) implementation of pilot CM agreements initiated; (iv) comprehensive IEC strategy developed and tested for implementation; (v) biodiversity M&E system designed and tested; (vi) management plan for second phase finalised and adopted; (vii) memoranda of understanding with partner agencies signed and co-financing commitments confirmed. In the final year of the project a full-scale evaluation will be undertaken that will provide detailed, practical recommendations for the implementation of future biodiversity conservation projects in Algeria and will consider such issues as knowledge acquisition, capacity improvement, and environmental impact. UNDP, may, at its discretion, schedule additional independent evaluations if deemed necessary.

55. The project builds on the lessons learnt during the implementation of the PDF-B and derived from other national and international conservation programmes (Table 1) and from the El Kala National Park Project, a previous GEF intervention in Algeria (Table 2).

Table 1. General lessons.

Lesson	Design Feature
Participatory biodiversity protection and sustainable use projects have been shown to require long timeframes in order to deliver conservation outcomes.	A time horizon of eight years has been selected for project implementation with a first, shorter preparatory phase of three years and a longer second phase of five years to deliver project final outcomes. A number of benchmarks are built into the log-frame as a means of evaluating project performance before graduation between phases
Effective capacity for PA management is often constrained by lack of a strong supporting legal framework and the adoption of site-specific rules and regulations	Significant resources have been allocated to tackle the legal issues at the onset of the project and clear benchmarks are set for outcomes to be delivered before graduation between phases.
Direct recruitment of staff by conservation projects often results in highly trained and motivated staff being left jobless after termination of project.	The development of human resources will concentrate on training, recycling and rendering operational the over 600 permanent PAMU staff.

Lesson	Design Feature
	Further staff will be recruited only as additional funds are made available by the GOA
In extreme, arid environments conventional management methods based on parameters such as static carrying capacities and fixed resource units have been shown to be inappropriate.	An adaptive management framework will be adopted, enabling the development of new forms of governance, based on flexible and plural legal frameworks and institutions that are rooted in an appreciation of the consequences of ecological uncertainty in desert ecosystems. In sites of key biodiversity resources, more intensive management will be supported while over the rest of the area management will be more extensive.
Effective participatory processes are open-ended and strongly based on 'learning by doing' in order to fit the unique needs and opportunities of different contexts.	The project will support a processual approach, whereby the range of possible initiatives that may be supported by the project is deliberately left open so that true stakeholder participation and the identification of site-specific solutions are not foreclosed.

Table 2. Specific lessons learnt from the implementation of El Kala National Park project.

Shortcomings associated with El Kala project	Lessons learnt
Project design and formulation was not sufficiently participatory.	Special attention was placed during PDF-B formulation and implementation stages on stakeholder consultations engaging key representatives of local NGOs and civil society as well as selected members of relevant wilaya administrative and technical services.
Project implementation adopted national coordination and execution arrangements, which resulted in the national coordinating agency (Ministry of Agriculture) being solely responsible for project implementation.	Project implementation arrangements are based on the UNOPS execution modality, backstopped by UNDP, thus placing project management responsibilities under the authority of more than a one agency.
Project management functions were concentrated in the hands of a single National Manager (Coordinator) attached to Department of Nature in the MOA.	The project will be co-managed by a national co-ordinator, two field directors, and an international Chief Technical Advisor recruited by UNOPS.
No presence in the country of the GEF Implementing Agency (World Bank) with resulting poor monitoring and evaluation of project activities and inadequate management of project funds.	Strong UNDP presence in Algeria supported by a full-time GEF-UNDP Officer and Focal Point will ensure that project activities are closely monitored and evaluated. Project financial management and fund disbursement will be audited every year according to UNDP rules and procedures.

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الجمهورية الجزائرية الديمقراطية الشعبية

وزارة تهيئة الإقليم و البيئة

المفتشية العام للبيئة

17 SEPT 2001 في الجزائر رقم...86.../م.ع

MONSIEUR LE REPRESENTANT RESIDENT A.I

OBJET : Endossement du document de projet relatif à la préservation de la biodiversité d'intérêt mondial dans les parcs nationaux du TASSILI et de l'AHAGGAR

REF : Votre Envoi du 09 septembre 2001

Par envoi visé en référence, vous avez bien voulu, en ma qualité de point focal opérationnel national pour le FEM, m'informer de la contribution financière d'un montant global de 500.000 USD, décidée par le PNUD, pour soutenir les activités relatives à la lutte contre la pauvreté et les alternatives de subsistance identifiées par le projet cité en objet, d'une part, et le document « Brief » , pour commentaires et endossement, d'autre part.

23 SEP 2001

HD

MONSIEUR JULIO GRIECO
REPRESENTANT RESIDENT A.I
PNUD - ALGER

En retour, **j'ai l'honneur de vous confirmer notre endossement du document de projet relatif à la préservation de la biodiversité d'intérêt mondial dans les deux parcs nationaux du TASSILI N'AJJER et de l'AHAGGAR,** et vous prie de bien vouloir diligenter les procédures requises auprès du FEM.

Veuillez agréer, Monsieur le Représentant Résident, l'expression de ma parfaite considération.

MONSIEUR DJAMEL ECHIRK
POINT FOCAL OPERATIONNEL
NATIONAL POUR LE FEM

Annex B. Incremental Cost Assessment

Broad Development Goals

Economic policy: The GOA's principal economic goal is 5% annual growth in GDP, with an increasing role for the private sector in meeting growth targets. In agriculture the GOA recently confirmed that they intend to return the agricultural sector back to private management. At the project site all government run farming cooperatives have been disbanded or transferred to private ownership, however irrigated water remains a subsidized commodity, and camel herders receive a per head subsidy for calves.

Environment policy: The 1983 Law on Protection of the Environment provided the legal framework for Algeria to develop a system of protected areas, under which it has designated 10 National Parks. This includes integral reserves, 2 biosphere reserve designations and a World Heritage Site, and 4 hunting reserves. The total area of coverage is over 500,000 km^2 or more than 20% of the countries surface area. Algeria ratified the Convention on Biological Diversity in 1995. It is currently formulating it BSAP, and is slowly building the capacity to manage its national parks; including the creation of the National Agency for Nature Conservation (ANN), The General Directorate for the Environment (DGE), and finally the High Council for the Environment and Development. The later coordinates and integrates environment and development policies between governmental ministries.

Global Environmental Objectives

Global Significance: The National Parks of Tassili n'Ajjer and Ahagger form the largest contiguous block of Desert biome. They contain three important massifs, Ahnet Immidir, Tassili n' Ajjer and Ahaggar which are exceptionally rich areas of floral diversity as they are a refuge for most of the Mediterranean flora in the biome. The consequent isolation between the massifs has lead to localized concentrations of floral endemism; as much as 50% of all plants in some cases. In total 73 endemic species have been identified, of which 36 are endangered, but floral inventories are far from complete. It is thought the floral diversity and the relative inaccessibility of the massifs have attracted higher than normal concentrations of fauna. Among the fauna; more than 4 species of mammal are endangered, and 12 relict species of reptiles, 2 relict amphibian species and 4 relict fish species.

Threats to biodiversity of Global Significance: Through a consultative exercise the PDF B identified the following threats: overexploitation of vegetation for fuel wood, charcoal, medicinal and culinary use and forage; poaching; and the relatively minor threat of habitat modification from agriculture, infrastructure development; the effects of pollution and waste. The objective of the project is to conserve and sustainable use this globally significant biodiversity, against these threats.

Baseline

Those activities expected to occur during the life of the project are described below under the output on which they will have an impact.

Output 1: Institutional Capacity Building for Field Conservation enabled through legal and human resources and infrastructural development

Over the life of the project the National Park Offices for A'Haggar and Tassili n'Ajjer will incur recurrent costs of around USD 57,400,000 over the life of the project. This includes: the salaries of over 500 park staff; the maintenance of a nursery, access tracks, park offices, accommodation and guard posts; vehicles and communications etc. The Wilaya's of Ellizi and Tamanrasset are planning USD 408,862,500 in improvements to roads, airport facilities, telecommunications, solid and liquid waste facilities and services. These investments will facilitate tourism and help to mitigate the environmental impact of urbanization in the two parks.

Output 2: Collaborative management of protected areas is operational, based on adaptive, equitable and sustainable use of biodiversity resources.

Over the life of project the Wilaya will spend USD 4, 000,000 on meetings of the locally elected representatives of the People's Assembly, to approve government expenditure and enact law. The growing number of NGO's involved in natural resource management will spend an estimated USD 1,200,000 in operational costs. The salaries of over 500 local community guards who help manage the natural resources of the two park's, are listed under output 1. However there is currently no local consultation by the Park during either the development or implementation of management plans, and there are no plans to introduce a consultation process.

Output 3: Eco-tourism is managed to demonstrate innovative, environmentally compatible, economic activities meeting sustainable livelihood needs

Although visitor numbers to the two parks are currently estimated at just a few thousand per year, the conditions for an increase in numbers are now improving. The two parks will continue to collect gate fees from visitors coming into the two parks and entrance fees to the museum; hotels will continue registering guests; and guards will remain at some of the most important archeological sites to oversee visitors at a total estimated cost of USD 9,815,750. Some leaflets and signs informing tourists of popular tourist circuits and best conduct in the parks have already been printed and distributed to tourists from this stock. As yet no best practice guidelines or licensing of the 150 active tourist operators have been adopted within the two parks, and the parks' capacity to administer and monitor such guidelines or licenses is limited.

Output 4: Information Education Communication (IEC) efforts are building and national constituencies for Biodiversity Conservation

In the absence of this project no coordinated IEC activities on biodiversity conservation are foreseen.

Output 5: Monitoring and Evaluation of Biodiversity resources, their utilization and management has been tested, and a system is operational.

The INRF will incur costs of USD 38,000 as they continue to monitor changes in the endangered Tarout Cypruss; the National Meteorological Office will continue to monitor weather patterns in the two parks at an estimated cost of USD 6,475,000; and WWF will monitor changes in important wetlands in the two parks at an estimated cost of USD 25,000 including an Algerian in-kind contributions. The estimated cost of employing community guards to monitor activities within the two parks is listed under output 1.

Output 6: Management Plans are developed and biodiversity conservation is firmly inscribed on the local development agenda

With the assistance of UNSECO Tassili National Park developed a management plan in the late 1980's, and A'haggar National Park has been divided into four zones for park management. In practice park activities are programmed annually, following approval of the park's annual budget by the Ministry of Culture and the Orientation Council. The total cost of budget formulation and approval, including supporting studies over the life of the project is estimated at USD 12,271,000. The two Wilaya plan to spend over the life of the project a further USD 36 662 500 in urban planning, and impact assessment to minimize the environmental impact of urban development, including a feasibility assessment for wind power generation.

Output 7: Eco-development and sustainable livelihoods are supported through financial and human resources targeted by government, development agencies, and communities.

- *Goat fattening Scheme:* the government plans to invest USD 300,000 to provide poor families with goats and support in the production of supplemental fodder.
- *Support for extensive agriculture:* The GOA plans to invest USD 1,187,500 to dig 95 new water holes for nomadic pastoral Tuareg to water their animals.
- *Incentives for Cultivated Agriculture:* combined investments, of USD 9,167,390 million, in irrigation and drainage and seed and root-stock for windbreaks and a range of crops are planned by the GOA to encourage private sector agriculture, in identified suitable areas.
- *Support to small farms:* the GOA plans to invest USD 687,809 in date palm trees; fruit trees and the maintenance of traditional irrigation systems in orchards to relieve poverty and easy the transition to privatization of the agricultural sector for small framers.
- *Energy Alternatives:* The GOA will be removing subsidies for bottled gas, while investing USD 6,475,000 in solar and fossil fuel electricity generation capacity, although this investment will not benefit all communities. Some will be left with higher gas prices, and will not be linked to the power grid.
- *Rehabilitation of degraded areas:* The GOA plans to invest USD 1,192,841 in tree planting and other soil stabilization techniques to rehabilitate urban peripheries, degraded by over collection of fuel wood, and dunes.
- *Eco-tourism:* Around 150 tourist businesses operate in the two parks, as well as a number of artisans who work leather, metal and other materials primarily for the

tourist trade. The GoA plans to spend USD 3,085,000 to help attract tourism to the area, including restoration of archeological and historical paintings, artifacts and the construction of a mini-zoo.

The GEF Alternative

Socio-economic conditions continue to change rapidly in Algeria, which in turn have an impact on the management of Tassili-Ahaggar region. It is reasonable to expect that without GEF intervention existing threats to biodiversity will escalate and that habitat conditions will become degraded at an increase rate, if action is not taken.

Incremental costs have been distinguished from co-financing according to the following principles:

- The GEF will fund all one-time costs to improve the capacity of the park authorities to manage the parks for biodiversity conservation and sustainable use, including the regulation of eco-tourism;
- co-financing will cover all recurrent costs of park management to demonstrate financial sustainability of park management. However in some cases The GEF will initially absorb additional recurrent cost for park management generated by the project, but these will be fully absorbed by sustainable sources of co-financing in a transition period during the life of the project;
- the GEF will fund one-time technical assistance costs to assist local communities to make the transition to alternative livelihood practices; and
- the GOA will redirect baseline resource, to support alternative livelihoods being promoted by the project, and avoid baseline activities conflicting with the nature and intent of these alternatives.

Output 1: Institutional Capacity Building for Field Conservation enabled through legal and human resources and infrastructural development

The GEF will finance the costs of refocusing and boasting park staff capacity to conserve biodiversity in the two parks, and generate finances for park management from park concessions; and adopt participatory and co-management practices. This will include legal review and drafting; all construction costs listed and necessary to improve park management; staff training in biodiversity conservation management techniques. The GEF will also absorb the staff salaries of all newly recruited park staff. However by year 3 the GOA will co-finance all staff salaries, maintenance and other recurrent costs of managing the two parks.

Output 2: Collaborative Management of protected areas is operational based on the adaptive, equitable and sustainable use of biodiversity resources.

The GEF will fund the full salaries and costs of the Collaborative Management Team to train park staff in collaborative techniques, sensitize local communities to the idea of co-management; broker pilot agreement between local communities and park authorities;

and foster effective co-management fora. Once established the GOA will co-finance the costs of maintaining co-management institutions and practices, established by the Collaborative Management Team.

Output 3: Ecotourism is managed to demonstrate innovative, environmentally compatible, economic activities meeting sustainable livelihood needs.

The GEF will fund all activities to enable the park authorities to license and regulate eco-tourism practices in the two parks, and the cost of developing a marketing strategy for attracting eco-tourism This will include: developing best practices guidance and licensing systems; training park staff and guides in administering and enforcing best practices; sensitizing eco-tourism operators to best practices. The GOA will co-finance the full costs of implementing the eco-tourism plan, as well as the costs of communicating with, administrating and enforcing eco-tourism activities within the two parks. Tourism operators will also have access to micro-credit (see output 6), to cover investment costs required to conform to best-practice guidelines, issued by the two parks.

Output 4: Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation

The GEF will fund the costs of designing and implementing a 7 year IEC programme, including programmes based in the field; tours and workshops; coverage of project activities in TV radio and print; and documentaries. In year 6 the GEF will fund the costs of a second 7-year phase of the IEC programme. The GOA will co-finance the costs of Park staff involvement, as defined under output 1, and by the end of year 7 assume the full cost of implementing the second phase of the IEC programme.

Output 5: Monitoring and evaluation of biodiversity resources, their utilization and management has been tested, and a system is operational.

The GEF will fund the costs of setting-up the BMU with qualified staff; designing and implementing over 5 years, a monitoring and evaluation programme, including efforts to engage stakeholders in participatory monitoring and evaluation. By the end of year 5 the monitoring and evaluation programme will be entirely co-financed.

Output 6: Management plans are developed and biodiversity conservation is firmly inscribed on the local agenda

The GEF will fund the full costs of developing all management plans for conservation and sustainable use of biodiversity in the two parks, in participatory manner, while the GOA will fund the costs of implementing the plans.

Output 7: Eco-development and sustainable livelihoods are supported through financial and human resources targeted by government, development agencies and communities.

- *Micro-credit:* The GEF will fund the costs of setting up a micro-credit scheme and 15% of its capitalization to assist project proponents with otherwise prohibitive initial investment costs to engage in sustainable use schemes being promoted under the

GEF Alternative. The remaining 85% capital for the micro-credit scheme, will be co-financed.

- *Improved animal husbandry:* Under the baseline the GOA has earmarked USD 300,000 to buy goats and promote supplemental feed production as a livelihood generation programme for poorest sections of society in the two parks. Under the alternative these resources will be redirected to promote better management of rangeland resources to supply goat fodder, and a scheme to add value to milk, meat and skin products to generate equivalent income under the baseline. The GEF will fund all costs to promote rangeland tenure agreements; fund the costs of training participants in improved extensive range management techniques; and techniques to add value to goat products. The GOA will fund the costs of equipment to demonstrate processing and packaging techniques to add value to goat products, while micro-credit will be available for individuals to invest in equipment themselves to scale-up the demonstrations.
- *Chicken farming:* Under the baseline, urban peripheries and sites important for both biodiversity pastoralists are being overgrazed. The GoA will fund the full costs of activities to promote the adoption of chicken farming, as an alternative livelihood and as a means of reducing grazing pressure. Micro-credit will be available to new farmers for capital investment.
- *Extensive Pastoral Management:* Under the baseline the GOA plans to invest USD 1,187,500 to dig 95 new water holes to provide additional water resources for nomadic pastoralists. Under the GEF alternative the GOA will instead dig shallow collecting ponds to hold rainwater. Collecting ponds provide additional water resources, but dry-out during dry periods. This helps to maintain a balance between available pasture and the size of nomadic livestock herds, and prevent overgrazing. The GEF will fund the cost of studies to ensure optimal location of collecting ponds, to maintain nomadic mobility, effectively utilize rangeland resources, and minimize overgrazing. The GEF will also fund the costs of a process to redefine, secure agreement and management arrangements for rangeland tenure rights that promote long-term custodianship and minimize unsustainable practices such as over-grazing and free riding.
- *Medicinal Plants:* Under the baseline the GOA plan's to invest USD 9,167,390 to encourage cultivated agriculture. Under the alternative the GOA will re-focus these resources on encouraging medicinal plant cultivation to relieve pressure from over-collection of wild specimens. The GEF will fund the costs of adapting, transferring and demonstrating technical methodologies to cultivate, process, store and market medicinal species over-collected in the two parks; and the costs of brokering sustainable collection agreement of wild specimens. The GOA will fund all necessary infrastructure including road access and irrigation, for cultivation and the costs of enforcing sustainable collection agreements of wild resources in the two parks.
- *Energy Alternatives:* The GOA is removing subsidies from bottled gas and investing in solar technology as an alternative energy source. The GEF will fund the costs of demonstrating additional low-cost off-grid energy technologies, such as solar stoves, and energy efficient wood stoves to communities not targeted by the GOA's solar technology investment, and micro-credit will be made available to assist local

communities with initial investments in solar and energy efficient technologies, and scale up the technology demonstrations.

- *Land rehabilitation:* The GEF will compliment, GOA's rehabilitation scheme to plant trees and fix the soil in urban peripheries and dune areas, by funding the incremental costs of establishing and maintaining native tree species over exotic tree species.
- *Ecotourism services:* Under output 3 the GOA will fund the costs of implementing an eco-tourism strategy to help generate gate and concessions fees for park management as well as livelihoods compatible with biodiversity conservation, while the GEF will fund all the start-up costs of developing the strategy. The GoA will also fund the costs of expanding the number of handcraft manufacturers to take advantage of the expected increase in tourist numbers.
- *Camel tourism:* Under the baseline a range of tourist activities are available, including 4 wheel drive tours and camel trekking. Under the Tourism strategy low impact tourism will be encouraged, while high impact tourism will be discouraged. The GoA will fund the costs to support the growth of camel trekking, including business start-up and support, training in best-practices, and support in marketing services. Micro-credit will be available to operators for capital investments.
- *Camel dairy production:* Recognizing the highly variable nature of tourism, the GoA will fund the full costs of activities to promote Camel dairy production, including technical advice in husbandry and business aspects. Micro-credit will be available to operators for capital investments.

Scope of Analysis

The scope of analysis includes the geographic, institutional, market, policy and legislative factors having an impact on the projects target areas, as well as the costs and benefits generated from the project activities. This includes: (a) the two parks; (b) all stakeholders in the two parks (c) socio-economic forces acting on the two parks and (c) government policies, legislation and plans effecting the two parks.

Costs

The total project costs are US$ 22,334,192. Project co-financing (GOA and UNDP) amounts to 56% of this total. Together with the baseline activities, the total alternative scenario will cost US$ 570,114,192 of which the total project costs amount to 0.5%. This is a sustainable use project that builds on a substantial baseline, and which is complemented by significant co-financing. The GOA is fully committed to this project and its sustainability beyond the life of the project.

Incremental Cost Matrix

Component	Scenario	Cost (USD)	Domestic Benefit	Global Benefit
Output 1: Institutional capacity building for field conservation enabled through legal and human resource and infrastructural development	Baseline	466,262,500	Management of archeological heritage in the two parks for national prosperity	Little focus on management of the two parks for conservation and sustainable use of biodiversity in the two parks
	Alternative	11,259,409	Improved capacity of park authorities to manage of biodiversity conservation and sustainable use in the two parks	Institutional mandate and capacity to manage conservation and sustainable use of globally significant biodiversity in the two parks
	Increment	3,817,748	Improved capacity of park authorities to manage of biodiversity conservation and sustainable use in the two parks, less the recurrent costs	Institutional mandate and capacity to manage and regulate conservation and sustainable use of globally significant biodiversity in the two parks
Output 2: Collaborative management of protected areas is operational, based on adaptive, equitable and sustainable use of biodiversity resources	Baseline	5,200,000	Little cooperation and buy-in of local communities in park management of natural resources	Loss of globally significant biodiversity in the two parks
	Alternative	2,618,028	Cooperation and collaboration between park authorities and local communities in the management and use of the parks' natural resources	Collaboration of local communities and park authorities promoting effective conservation and sustainable use of biodiversity in the two parks
	Increment	2,195,948	Cooperation and collaboration between park authorities and local communities in the management and use of the parks' natural resources.	Collaboration of local communities and park authorities promoting effective conservation and sustainable use of biodiversity in the two parks
Output 3: Eco-tourism is managed to demonstrate innovative, environmentally-compatible, economic activities	Baseline	9,815,750	Some eco-tourism is encouraged which generates some income for local communities, although activities	Globally significant biodiversity is being lost because of eco-tourism

Component	Scenario	Cost (USD)	Domestic Benefit	Global Benefit
meeting sustainable livelihood needs			are not regulated and biodiversity is being lost as a result	
	Alternative	1,426,492	Eco-tourism plan is developed and implemented to encourage income generation and fees for park management and activities are regulated.	Eco-tourism adheres to best practice guidelines, and generates fees for park management to conserve and sustainably use globally significant biodiversity in the two parks
	Increment	1,169,651	Eco-tourism plan is developed, and eco-tourism best practices are developed, and all park staff and tourist operators are trained	Eco-tourism plan adheres to best practice guidelines, and generates fees for park management to conserve and sustainably use globally significant biodiversity in the two parks
Output 4: Information education communication (IEC) efforts are building constituencies for biodiversity conservation	Baseline	0	Sporadic communication to promote an understanding of the impacts of natural resource use on the environment	Local communities are destroying or degrading globally significant biodiversity because of a poor understanding of the impact of their activities in the environment
	Alternative	1,115,219	Better understanding by local communities of the long-term impact of resource uses on the environment	Local communities are more aware of the impact of there activities on the environment, and are prepared to engage in alternative less environmentally damaging means income generation.
	Increment	1,096,651	Better understanding by local communities of the long-term impact of resource uses on the environment	Local communities are more aware of the impact of there activities on the environment, and are prepared to engage in alternative less environmentally damaging means income generation.
Output 5: Monitoring and evaluation of biodiversity resources, their utilization and management tested, and a system operational	Baseline	6,513,000	Sporadic monitoring of biodiversity and anthropogenic activity in the two parks	
	Alternative	886,321	Results from strengthened and coordinated participatory monitoring and evaluation of	Adaptive management techniques applied by park authorities to improve the effectiveness of park

Component	Scenario	Cost (USD)	Domestic Benefit	Global Benefit
			biodiversity trends in the two parks and causes of change, used by park management to modify and adapt park management plans, during and beyond the life of the project	management and the resulting conservation and sustainable use of globally significant biodiversity in the two parks.
	Increment	717,714	Results from strengthened and coordinated participatory monitoring and evaluation of biodiversity trends in the two parks and causes of change used by park management to modify and adapt park management plans, for the first six years of the project.	Adaptive management techniques applied by park authorities to improve the effectiveness of park management and the resulting conservation and sustainable use of globally significant biodiversity in the two parks.
Output 6: Management plans are developed and biodiversity conservation is firmly inscribed on the local development agenda	Baseline	48,933,500	Park Resources programmed annually, without consistent direction towards long-term goals or integration with Wilaya development plans	Ineffective use of park resources leading to loss of globally significant biodiversity in the two parks
	Alternative	601,878	Park resources programmed and disbursed to achieve conservation and sustainable use of biodiversity in the two parks, and integrated and consistent with Wilaya development plans	Effective use of park resource promoting conservation and sustainable of the two park's biodiversity
	Increment	538,462	Park resources programmed for conservation and sustainable use of biodiversity in the two parks, and integrated and consistent with Wilaya development plans	Effective planning of park resource to promote conservation and sustainable of the two park's biodiversity
Output 7: Eco-development and sustainable livelihoods are supported through financial and human resources targeted by government, development agencies and communities	Baseline	11,440,650	Unsustainable or destructive livelihood practices, generating short-term income, but degrading the natural resource base	Degradation and destruction of globally significant biodiversity.

Component	Scenario	Cost (USD)	Domestic Benefit	Global Benefit
	Alternative	4,041,445	Sustainable livelihood alternatives, and energy use demonstrated and adopted	Globally significant biodiversity resources used in a more sustainable manner
	Increment	253,727	Technical assistance, training, and access to micro-credit available to local communities to encourage and facilitate adoption of alternative sustainable livelihoods and energy use options	Conditions created enabling local communities to adopt sustainable livelihood alternatives and energy use options, thus promoting globally significant biodiversity resources used in a more sustainable manner
	PDF B GEF Co-financing	 180,000 25,000		
	Total Baseline Total Alternative Total Increment	548,165,400 21,948,792 9,789,901		

Annex C. Logical Framework

Objectives	Indicators	Means of Verification	Assumptions & Risks
Goal: To protect globally significant biodiversity of the Central Saharan region.	1. Biological monitoring in Y8 indicates that the integrity of the Tassili n'Ajjer NP and Ahaggar NP remains secure 2. Populations of indicator species remain at viable levels 3. Populations of rare and endangered flora and fauna remain at current levels or are enhanced	1. Monitoring records and terminal evaluation 2. Biological surveys 3. Biological surveys	▪ Cross-section of Central Saharan ecosystem exists within the Protected Areas including viable populations of threatened species.
Purpose: The Tassili N'Ajjer NP and the Ahaggar NP are managed to ensure the conservation and sustainable use of globally significant biodiversity.	1. Permanently staffed, technically autonomous and financially sustainable Protected Area Management Units are established. 2. The protected areas are collaboratively managed, by involving all key stakeholders in the adaptive, equitable and sustainable use of biodiversity resources 3. The protected areas are firmly inscribed as the operational framework for local planning and development activities	1. Independent evaluation 2. Independent evaluation 3. Management plan and regional development plans	▪ Re-orientation of PAMU towards biodiversity conservation is actively supported by local and national institutions ▪ Government is willing to test new participatory management methods and share responsibilities and accountability ▪ Baseline of sustainable development is assured
Output 1: Institutional capacity for field conservation enabled through legal, human resources and infrastructure development	**Phase 1** 1.1 PAMU mandate and organigram redefined by Y2 4Q 1.2 Legal procedures for establishing Collaborative Management (CM) agreements, licensing of economic activities and extension of police powers revised and approved 1.3 Basic training and recycling of junior personnel completed. 1.4 Additional management staff recruited by Y1 4Q, trained and redeployed by Y3 Q4 1.5 Regional study tours conducted 1.6 Plans for infrastructure development completed by Y2 Q4 1.7 Park headquarters constructed by Y3 Q4 1.8 Vehicles and basic field, office and technical equipment procured 1.9 Conservation oriented land use, hunting regulations/plan and environmental auditing protocols reviewed/developed by Y3 Q4 Phase 2 1.10 PA bye-laws and regulations enacted by Y5 4Q 1.11 Regional workshops and overseas attachments attended	1.1 Legal texts 1.2 Legal texts 1.3 APR 1.4 PAMU records 1.5 APR 1.6 Infrastructure designs 1.7 Field assessment 1.8 Procurement documents 1.9 Park code 1.10 APR 1.11 Independent evaluation 1.12 Field assessment	▪ Legal modifications are officially approved and enacted in a timely fashion. ▪ Additional staff with appropriate profile in biodiversity conservation are available for recruitment ▪ Management staff are willing to be redeployed to sub-headquarters and outposts ▪ The institutionalisation of Income-generating activities is approved by government regulators

Objectives	Indicators	Means of Verification	Assumptions & Risks
	1.12 Participatory management, monitoring and law enforcement procedures being applied by Y5 1.13 All infrastructure completed by Y7 Q4 1.14 Radio-network operational by Y4 Q4 1.15 Equipment maintained according to schedule 1.16 Income-generating activities are supplement the PAMU recurrent budget and all additional recurrent costs are absorbed into PAMU budget by Y7	1.13 Field assessment 1.14 Maintenance records 1.15 Administrative records	
Output 2: Collaborative management of protected areas is operational based on the adaptive, equitable and sustainable use of biodiversity resources.	**Phase 1** 2.1 Collaborative Management (CM) team mobilised by Y1 Q4 2.2 Participatory methods routinely used by PAMU staff by Y2 Q3 2.3 Pilot CM agreements for successfully negotiated by Y3 Q1 2.4 Community guards designated and usufruct / stewardship rights accorded for CM pilot agreements by Y3 Q2 2.5 Implementation of CM pilot agreements initiated by Y3 Q4 **Phase 2** 2.6 Participatory conservation methods being independently applied by Y4 Q4 2.7 Further CM agreements formalised by Y5 Q4 2.8 Local conservation-enabling institutions are operating legally-sanctioned communal natural resource regimes by Y5 Q4 2.9 Intra-community forums, local management committees and PAMB are meeting regularly and providing inputs into management (on-going)	2.1 APR 2.2 Independent evaluation 2.3 CM official documents 2.4 CM official documents 2.5 APR 2.6 Independent evaluation 2.7 CM official documents 2.8 Independent evaluation 2.9 APR	▪ PAMU legal prerogatives to enter into CM agreements are enacted ▪ Government is willing to test new participatory management methods and share responsibilities and accountability ▪ Intra-community consensus on management strategies can be obtained ▪ Local institutions are able to mediate stakeholder conflicts and drive conservation measures at the local level
Output 3: Ecotourism is managed to demonstrate innovative, environmentally-compatible, economic activities meeting sustainable livelihood needs.	**Phase 1** 3.1 Basic training programmes for ecotourism operators, investors and local communities completed by Y3 Q2 3.2 Pilot private sector local initiatives based on CM procedures are operational by Y3 Q4 3.3 Ecotourism activities are routinely monitored according to procedures set out in the licenses and related EIAs 3.4 A finely-targeted marketing strategy is designed by Y3 Q2. **Phase 2** 3.5 Ecotourism plan and best practice guidelines are published by Y4 Q1 3.6 Further local ecotourism activities are licensed according to best	3.1 APR 3.2 CM official documents 3.3 Independent evaluation 3.4 Marketing strategy 3.5 Plan and best practice guidelines 3.6 APR 3.7 Independent evaluation	▪ Law and order fundamentals do not foreclose the development of ecotourism activities ▪ The CM process is operational ▪ Mandated institutions successfully co-ordinate regulatory activities ▪ Algeria becomes an attractive market for international tourism and the tourism product is competitive

Objectives	Indicators	Means of Verification	Assumptions & Risks
	practice guidelines by Y5 Q5 3.7 The Tassili Ahaggar is recognised as a leading ecotourism site in the Central Saharan region.		
Output 4: Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation.	**Phase 1** 4.1 A comprehensive Information, Education, Communication (IEC) strategy is developed by Y2 Q4 4.2 Pilot IEC tools and activities are designed, tested and updated by Y3 Q4 **Phase 2** 4.3 Strong local and national advocacy has been built for the protection of biodiversity in the Tassili-Ahaggr 4.4 The conservation initiative is comprehensively covered in the local national and international media.	4.1 IEC strategy 4.2 APR 4.3 Independent evaluation 4.4 IEC media archives	▪ Education authorities are receptive to complementary field-based educational activities ▪ NGOs agree to collaborate in advancing proposed IEC activities ▪ Local and national media willing to collaborate as active conservation partners
Output 5: Monitoring and evaluation of biodiversity resources, their utilisation and management has been tested, and a system is operational.	**Phase 1** 5.1 A central Biodiversity Monitoring Unit (BMU) for the Tassili-Ahaggar region has been established by Y3 Q4 5.2 A biodiversity monitoring programme including participatory data collection methods has been designed by Y3 Q4 5.3 Initial treatment of remote sensed data has been completed and final output adapted for PC platforms by Y2 Q4 5.4 Selected BMU staff have been trained to implement the M&E programme and operate the GIS system **Phase 2** 5.5 BMU field units are established at PAMU sub-headquarters by Y5 Q4 5.6 The M&E system is operational and generating data sets and reports that contribute to management decisions by Y6 Q4 5.7 M&E data are synthesised and results shared with all serious stakeholders in Algerian biodiversity conservation	5.1 APR 5.2 M&E design documents 5.3 GIS system 5.4 APR 5.5 APR 5.6 Independent evaluation 5.7 National and international publications	▪ Technical capacities to implement monitoring system can be mobilised to serve on a long-term basis in the region. ▪ Park decentralised infrastructure is realised as scheduled
Output 6: Management plans are developed and biodiversity conservation is firmly inscribed on the local development agenda.	**Phase 1** 6.1 Desktop survey completed by Y1 Q3 6.2 Baseline field surveys completed by Y2 Q4 6.3 Baseline and thematic maps produced by Y3 Q1 6.4 Resource profile for two PAs completed by Y3 Q1 6.5 Participatory planning and draft zoning completed by Y3 Q2 6.6 Management plan for 2nd phase finalised and adopted by Y3 Q3 **Phase 2**	6.1 Bibliographic review 6.2 APR 6.3 GIS system 6.4 PAMU documents 6.5 Management plans 6.6 Management plans	▪ Multi-stakeholder willingness to participate in planning ▪ Agreement can be reached between national, provincial and local governments and local communities on management requirements/ regulations

Objectives	Indicators	Means of Verification	Assumptions & Risks
	6.7 Updating of management plans according to key steps indicated under activities 6.1 – 6.6 completed by Y7 Q2 6.8 Official review: of management plans by Y7 Q4 6.9 Adoption of management plans for implementation by Y8 Q2	6.7 APR 6.8 APR 6.9 Management plans	
Output 7: Eco-development and sustainable livelihoods are supported through financial and human resources targeted by government, development agencies and communities.	**Phase 1** 7.1 Conservation best practice guidelines are presented at local workshops and resource materials developed 7.2 Memorandums of understanding with partner agencies are signed by Y2 Q4 7.3 feasibility study for cultivation, production and marketing of medicinal plants 7.4 Technical assistance has been provided for the design of co-financed sustainable livelihood activities and pilot schemes have been initiated by Y3 Q1 **Phase 2** 7.5 Co-financed sustainable livelihood support activities are implemented according to schedule. 7.6 Conservation objectives are incorporated into regional development plans 7.7 NGOs are providing independent advocacy functions and actively monitoring development operations	7.1 APR 7.2 Memoranda of Understanding 7.3 APR 7.4 Independent evaluation 7.5 Regional and sectoral development plans 7.6 Independent evaluation	▪ Eco-development provides alternative source of local livelihood ▪ Co-financing is realised through the leveraging of funds from the GOA ▪ NGOs agree to collaborate in advancing proposed monitoring of development activities

Activities	Phase 1 (years 1-3)	Phase 2 (years 4-8)
Output 1	1.1 Legal redefinition of PAMU mandate, functions and organigram 1.2 Design of legal procedures to allow the PAMU to enter into collaborative management agreements 1.3 Definition of legal procedures for licensing and monitoring of economic activities within PAs 1.4 Extension of police powers to selected PAMU staff 1.5 Formal and on-the-job training of junior personnel to operationalise policing, intelligence gathering, enforcement and reporting functions 1.6 Recruitment of additional management staff and decentralisation / redeployment towards sub-headquarters	1.13 Development and endorsement of PA bye-laws and regulations 1.14 Sensitise PA staff to best practices in PA management by sponsoring attendance at regional workshops and overseas attachments 1.15 Implement participatory management, monitoring and law enforcement procedures 1.16 Construct PA sub-headquarters, outposts, interpretation facilities and realise remaining infrastructure (tracks, signposting etc.) 1.17 Realisation of radio-network linking PAMU headquarters, sub-headquarters, outposts and mobile units 1.18 Institute equipment maintenance operations 1.19 Ensure additional costs of new staff and equipment maintenance are absorbed into PAMU budget

Activities	Phase 1 (years 1-3)	Phase 2 (years 4-8)
	1.7 Strengthening of operational capacity and participatory planning skills within PA staff cadre 1.8 Study tours for technical staff to protected areas in the region 1.9 Produce detailed plans for infrastructure development 1.10 Construct park headquarters 1.11 Procurement of vehicles and basic office and technical equipment 1.12 Review/develop hunting regulations/plan and environmental auditing protocols	1.20 Institutionalisation of income-generating activities to supplement the PAMU recurrent budget
Output 2	2.1 Establish and mobilise interdisciplinary Collaborative Management (CM) team. 2.2 Train PAMU social outreach teams in participatory learning and action skills 2.3 Negotiate pilot CM agreements based on: (i) identification of territory or set of resources; (ii) evaluation of the range of functions and sustainable uses provided; (iii) stakeholder analysis; (iv) determination of functions, responsibilities, benefits and rights of stakeholders; (v) formulation of management priorities and/or site management plan; (vi) establishment of conflict-resolution procedures for implementing collective decisions; (vii) agreement on specific rules for monitoring, evaluating and reviewing the partnership. 2.4 Accord usufruct and stewardship rights to local communities over areas and/or resources stipulated in CM pilot agreements 2.5 Formalise, publicise and initiate implementation of CM pilot agreements 2.6 Support functioning of PAMB	2.7 Support the implementation of formalised CM agreements 2.8 Provide further training for PAMU social outreach staff and selected stakeholders, as a means of forwarding the CM process towards more complex management agreements and larger areas of application following procedures detailed under activity 2.3 2.9 Build-capacity of local conservation-enabling institutions with strong authority on legally-sanctioned communal natural resource regimes 2.10 Convene regular intra-community forums to facilitate inform exchanges and resolve outstanding problems between community-based groups 2.11 Convene periodical meetings between local management committees to share experiences and co-ordinate management activities. 2.12 Continue to support the functioning of the PAMU and attendance by local management committee representatives
Output 3	3.1 Sensitise tourism operators, potential investors and other concerned parties about desert conservation and environmentally sound, sustainable desert tourism 3.2 Conduct training programmes for interpretation and guiding services and the management of visitor interpretation facilities 3.3 Provide technical assistance and micro-credits to facilitate local, private sector initiatives in obtaining usufruct rights and leases for the development and operation of ecotourism facilities and services 3.4 Design in collaboration with the private sector and other stakeholders a finely targeted and biodiversity friendly	3.6 Best practice guidelines for the development and diversification of ecotourism facilities and services 3.7 Strengthen the capacity of the PAMU and other regulatory bodies to license ecotourism activities according to procedures set out in the best practice guidelines 3.8 Continue supporting local, private sector initiatives in obtaining usufruct rights and leases for the development and operation of ecotourism facilities and services 3.9 Support the implementation of a marketing strategy to promote the Tassili Ahaggar as a leading ecotourism site in the Central Saharan region.

Activities	Phase 1 (years 1-3)	Phase 2 (years 4-8)
	ecotourism plan and marketing strategy. 3.5 Strengthen the capacity of the PAMU and other regulatory bodies to monitor ecotourism activities according to procedures set out in the licenses and related EIAs	
Output 4	4.1 Develop with local stakeholders a comprehensive Information, Education, Communication (IEC) strategy based on (i) clear identification of target audience and positioning; (ii) definition of simple message emphasising the links between the natural and cultural heritage of the Tassili-Ahaggar region; (iii) identification of target audience- and media-specific IEC tools and activities; (iv) detailed work-plan. 4.2 Design and develop pilot IEC tools and activities 4.3 Test and modify pilot IEC tools and activities	4.4 Continue to support the implementation of the IEC strategy through (i) field-based environmental education activities and tools complementing formal education programmes; (ii) interpersonal communication tools such as familiarisation tours, thematic workshops, information portfolios for specialised audiences; (iii) co-ordinated public relations with the local and national press and media; (iv) production of high-quality TV documentaries and internet-based products to make available in the public domain information on the protected areas and their activities.
Output 5	5.1 Establishment of a central Biodiversity Monitoring Unit (BMU) for the Tassili-Ahaggar region 5.2 Design the monitoring programme in collaboration with other agencies and institutions and building consensus on monitoring priorities 5.3 Develop simple participatory methods for data collection and train PAMU staff, so that information may be collected by different teams and results compared with confidence 5.4 Outsource initial treatment of remote sensed data and the design of an integrated database and information system with final output to be adapted for a PC platform using a user-friendly GIS package 5.5 Training of selected BMU staff to input data and use the integrated GIS system in order to generate data sets and reports that contribute to management decisions.	5.6 Establish field units of the BMU in each of the PAMU sub-headquarters 5.7 Support the implementation of the M&E system based on monitoring of: (i) habitat and land use through remote sensing and ground surveys; (ii) a manageable number of keystone / flagship species; (iii) utilisation of biodiversity within human impact zones using participatory techniques; (iv) PA management effectiveness through standardised methods of reporting with measurement of achievements against time-bound targets 5.8 Continue to support the GIS/information system in order to co-ordinate the flow of data, synthesise information and disseminate results 5.9 Ensure that information is shared with all serious stakeholders in Algerian biodiversity conservation
Output 6	6.1 Desktop survey and review of all available information on the Tassili-Ahaggar region 6.2 Field surveys to complete the collection of baseline data on biological resources and their utilisation, and including ecogeographic studies of key species 6.3 Production of baseline and thematic maps for PAs through the services of the GIS system 6.4 Synthesis of information on resource profile and technical descriptions of the two protected areas 6.5 Participatory planning through extensive interaction and negotiations with key stakeholders as initiated through the CM	6.8 Implementation and testing of management guidelines produced during the first phase. 6.9 Revision and updating of management plans according to key steps indicated under activities 6.1 – 6.6 6.10 Formulation of a comprehensive management plan covering the five-year period following project termination. 6.11 Regional and national review: of management plans by relevant institutions, government departments and key stakeholders 6.12 Official adoption of management plan for implementation

Activities	Phase 1 (years 1-3)	Phase 2 (years 4-8)
	process (output 2) 6.6 Draft zoning, based on stakeholder consultations and information from specialist missions, integrated GIS and M&E systems 6.7 Formulation and adoption of management guidelines for second phase of project	
Output 7	7.1 Sensitise the private and public sectors to innovate and incorporate emerging best practices from biodiversity conservation initiatives by developing resource materials and hosting local workshops 7.2 feasibility study for cultivation, production and marketing of medicinal plants 7.3 Negotiate and sign memorandums of understanding with partner agencies, establishing a joint programmatic framework for conservation and community development interventions 7.4 Provide incremental technical assistance for the design and implementation of the following co-financed sustainable livelihood pilot schemes: ▪ improved animal husbandry based on goat-fattening and the raising of local chicken varieties; ▪ extensive pastoral management based on the establishment of water collecting ponds in improved rangelands; ▪ based on a result of a feasibility study, conduct planting, production and marketing of economically valuable medicinal plants; ▪ micro-credit programme promoting energy alternatives and the distribution of solar appliances; ▪ land rehabilitation programme based on the planting of native tree species; ▪ traditional handicrafts and camel tours for visitors, supporting the diversification of ecotourism services	7.5 Continue to provide incremental technical assistance for the design and implementation of sustainable livelihood pilot schemes (activity 7.3) 7.6 Work with community planners to ensure timely delivery of co-financed activities 7.7 Ensure conservation objectives are fully incorporated into regional development plans, including infrastructual and sectoral plans 7.8 Support advocacy functions of NGOs to monitor development operations and provide early warning of conflicts and malfeasance

Annex D. STAP Technical Review / Response to STAP Comments

Algeria – Conservation and sustainable use of globally significant biodiversity in the Tassili and Ahaggar National Parks

by

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Introduction

"part à un moment qui ne te convient pas, quand tu arriveras le moment te plaira"
proverbe targui

1. This is an important and complex proposal that aims to protect a representative sample of the biodiversity of the Central Sahara region and specifically address the various issues involved in conserving and using sustainably those elements of biodiversity that are of global importance in the Tassili and n'Ajjer Ahaggar National Parks. These issues are usually not covered specifically in management plans for National Parks or other Protected Areas. The Tassili and Ahaggar Parks themselves, covering a land area of 452 000 km^2, are of global importance and important for resting migratory Palaearctic birds; they are also critical for desert biome conservation where the extreme environments, fragility of the ecosystems, climatic fluctuation, and physiological stress pose major challenges for the successful maintenance and exploitation of their biodiversity.

2. The sheer size of the area involved and its low population density, outside the urban areas, of nomadic Tuareg with their characteristic pastoral land use system, often involving annual transhumance, are additional complicating factors. The area contains 73 endemic species, half of which are threatened according to IUCN criteria, some of which are of economic or special scientific importance such as wild relatives of olive (*Olea laperinni*), a relict cypress (*Cupressus dupreziana*) that is one of 12 critically endangered plants selected by IUCN's Species Survival Commission to highlight the serious threats to species around the world, barbary sheep (*Ammotragus lervia*), slender-horned gazelle (*Gazella leptoceros*), the extremely endangered scimitar-horned oryx (*Oryx dammah*), and the cheetah (*Acinonyx jubatus*).

Scientific and technical aspects

3. Project preparation was carried out by means of a PDF-B grant during which a number of key lessons were learned (p.18) and taken into account in the project design. Also during the PDF-B phase, key biodiversity sites were assessed as suitable for demonstration of the management techniques to be replicated and applied on a wider scale. Six core areas have been identified covering between them c.10% of the combined Tassili and Ahaggar NPs.

4. The resultant proposal is generally well prepared and detailed. It is unusual in that it is planned to extend over two eight years in two phases, with a shorter preparatory phase of three years and a longer second phase of five years that will deliver the planned final outcomes of the project. It is noted that a mandatory independent evaluation will take place before moving on to the second phase of the project.

5. The Baseline Course of Action provides a critical and perceptive analysis of the current situation. It recognizes the seriously incomplete state of the biological inventory of the area and the unique vulnerability of these extreme dryland ecosystems that are characterized by climatic variability and unpredictability. It also identifies the main threats to the biodiversity of the area such as the overexploitation of the vegetation and particular species for fuelwood, charcoal, medicinal and culinary use; poaching; and unsustainable tourism, and the underlying causes such as inadequate institutional capacity and infrastructure, the insufficient involvement of local communities and the poor level of appreciation of conservation needs in the local development agenda.

6. The GEF Alternative proposed envisages seven key outputs. The first of these, institutional capacity building for field conservation hinges the ability to develop the human resources of the Protected Area Management Units (PAMUs), whose chief mandate is intended to become biodiversity conservation, mainly through training and redeployment of existing PAMU staff (provided they are able and willing), plus recruitment of a small number of additional technical and management staff, and by formal and informal training and study visits/overseas attachments. Given the known scarcity of biodiversity experts in Algeria, this will be a major challenge and will require considerable inputs from external consultants at least during the initial years. The second output, collaborative management of protected areas, is informed by a set of guidelines developed during the PDF-B process, and is planned to be flexible and highly participatory, with the establishment of conservation-enabling institutions as a key output. Output 3, management of ecotourism so as to demonstrate innovative, environmentally friendly economic activities that meet sustainable livelihood needs, will require considerable turn-around of the present situation but the proposed activities are well thought out. Output 4, the development of a comprehensive Information, Education, Communication strategy, to build local and national constituencies for biodiversity conservation, through raising the level of public awareness and their involvement in the conservation and management of the protected areas, is ambitious but well planned.

7. The activities of outputs 5 and 6 – monitoring and evaluation and management plans – are interrelated and partly interdependent. For example, monitoring depends on the establishment of a baseline set of data but this is included in the activities of output six. It is not clear that the development of a 'prioritised management plan for the Tassili-Ahaggar region' (p. 13, para 39) and the references in the Logical Framework to management plan or plans includes the preparation of management (or recovery) plans for the target species of plants and animals that are selected, as opposed to the parks as a whole. Likewise, no mention is made of the need for ecogeographic studies on these target species as a necessary precursor to such management plans although they may be included under Output 6, Activity 6.2 'Field surveys to complete the collection of baseline data on biological resources' (the term 'biodiversity resources' is a vague one). Since there is a common failure on the part of protected area managers to recognize the distinction between *in situ* conservation of ecosystems and *in situ* conservation of target

species within ecosystems, it would be helpful to address this quite explicitly in this project, since not only are they separate operations but have cost, training and resource implications.

8. Output 7 is also a complex one and involves a range of diverse activities ranging from micro-credit and ecotourism services to improved animal husbandry and medicinal plant cultivation and marketing as pilot sustainable livelihood schemes. Regarding the latter, medicinal plant cultivation to relieve pressure from over-collection of wild specimens, it is stated (p. A-6, para ? *Medicinal Plants*) that the 'GEF will fund the costs of adapting, transferring and demonstrating technical methodologies to cultivate, process, store and market medicinal species over-collected in the two parks; and the costs of brokering sustainable collection of wild specimens'. Annex I includes a list (somewhat marred by misspellings) of medicinal plants proposed for cultivation although it is not clear how it was derived. It should be noted that the conservation and sustainable use of medicinal plants is a highly complex, involving a series of tasks and issues, some of which are spelled out in the proposal. It is the subject of other substantial GEF-funded projects. There must be concern about the feasibility of covering this component adequately along with all the other activities proposed (themselves also complex) under this Output.

Global environmental benefits and/or drawbacks

9. The global environmental benefits that would derive from this Project if successfully implemented are several:

- The conservation and management of one of the world's most important desert protected areas
- The protection of the habitat for migratory Palaearctic birds
- The effective conservation and management of a number of the world's most endangered species of plants and animals
- Experience of conserving and managing specific biodiversity values (both at landscape/ecosystem and species/population level) within protected areas
- Collaborative management of protected areas

10. The only drawback is that the unique combination of circumstances limit the possibilities of applying the experience that can be derived from the project to other regions.

The GEF context, goals and operational strategies, Council guidance and provisions of the relevant Conventions

11. The Project meets all the main strategic considerations listed in the Operational Strategy 2 Biodiversity. It fits well into the GEF OP 1 on Arid and Semi-Arid Zone Ecosystems. It promotes the conservation and sustainable use of certain elements of biological diversity, in particular threatened endemic species, through many of the activities listed in O.P. 1.17.

12. It addresses many of the provisions of the Convention on Biological Diversity, notably Articles 6,7, 8, 10, 11, 12, 13, 14, 16, 17 and 18 and Annex 1 Identification and Monitoring.

Regional context

13. In the Saharan biogeographical province, the Tassili n'Ajjer and Ahaggar National Parks are of major importance for biodiversity conservation of the desert biome. Although the Tassili plateau is hyper-arid, there are sub-arid microclimates suitable for the survival of relict Mediterranean fauna and flora and as a consequence the flora has elements of Mediterranean, Sudano-Deccan and Saharo-Sindien species while the fauna contains elements originating from both the Mediterranean and the Saharan Palaearctic realm.

14. Traditional land-use systems such as various forms of pastoralism and transhumance are maintained in parts of the region by the indigenous peoples, such as the Tuareg and Bedouins in Algeria and in the southern High Atlas, Morocco. Medicinal and aromatic plants, have been used in the region for thousands of years and forms an important part of various local cultures; traditional medicines still play a major role in health care delivery systems.

Replicability

15. The project addresses a range of issues that, if successfully tackled, will be applicable to other parts of the desert biome in Africa and the Arab region, notably the negotiation of public participation strategies and agreements with local urban and community-based groups (including Bedouins) and their involvement as key stakeholders in the conservation and management of biodiversity and natural resources; the development of alternative livelihood strategies such as the introduction into cultivation of a range of medicinal plants species and their sustainable use and marketing, improved animal husbandry, and improvement of pastoral management; and the development of sustainable ecotourism. Other aspects, such as the conservation and management of elements of biodiversity such as target species of plants and animals, some of them highly endangered, within the overall context of the management plans of the National Parks themselves, should provide valuable lessons for application in other parts of the world.

Sustainability

16. As the Project Brief recognizes, the fragility of the desert ecosystems and the climatic variability, as well as the political uncertainties, add an element of unpredictability to the operations being proposed. The implementation and sustainability of the Project is largely dependent on the successful retraining and redeployment of the mainly existing staff of the Protected Area Management Units and on their willingness to remain in out-posted units, and on the identification and recruitment of additional technical and managerial staff, and external consultants, of suitable calibre. In addition, some of the activities and strategies that are proposed in the Projects, such as ecotourism and the implementation of participatory agreements, may be difficult to sustain at the desired

level, while others, such as the successful recovery or maintenance of endangered populations of plants and animals may be technically difficult to maintain.

Contribution to the improved definition and implementation of GEF strategies and policies

17. If successful, the Project should contribute to developing GEF strategies on sustainable management of target elements of plant and animal biodiversity within the context of Protected Area management strategies; also the development of community participatory management systems for biodiversity management. In particular, it should provide valuable lessons for further defining strategies for sustainable management of plant and animals resources in environmentally vulnerable arid and semi-arid zones, by combining production, socio-economic, and biodiversity goals.

18. It will also help define policies for the conservation and sustainable use of medicinal plants that are used by local communities and the recognition of their rights and the development of sustainable collection agreements of what are often overharvested resources.

Secondary issues

Linkages to other focal areas

19. The Project is relevant to the Focal Area of Climate change in view of the climatic instability of the area and its impact on its biodiversity. A part of the Project also specifically addresses issues that are of relevance to the Land Degradation Focal Area.

? **Linkages to other programmes**

20. Relevant linkages include the IBRD Sahara Regional Development Project (now closed), the UNDP/UNEP-supported Biodiversity Planning Support Programme Arab States (in which the WESCANA programme of IUCN - The World Conservation Union, coordinates the Arab States region and its 16 countries) and its database on biodiversity expertise in the region. There should be linkages to other UNDP and World Bank GEF projects in the region, e.g. the FP Transhumance for Biodiversity Conservation in the Southern High Atlas; and the PDF-B Morocco - Integrated Pastoral Range Management for Biodiversity Conservation and Sustainable Development.

Degree of involvement of stakeholders

21. Major parts of the project are concerned with the involvement of stakeholders, notably the activities leading to proposed output 2: Collaborative management of protected areas, that will involve representatives of local management committees as members of the Protected Area Management Board which includes all key stakeholders; those leading to proposed Output 6: Management plans developed and biodiversity conservation firmly on the local development agenda, that will involve key stakeholders in the Protected Areas; and those leading to Output 7: Eco-development and sustainable

livelihoods. The end of project situation envisages the collaborative management of the Protected Areas by involving all key stakeholders.

Capacity-building aspects

22. Capacity-building is an essential component of the Project and the area that causes greatest concern and risks (see above under **Sustainability**).

Innovativeness

23. Some of the proposed activities are highly innovative, such as those involved in the collaborative management of protected areas.

Conclusions

24. This is an ambitious, large-scale project that addresses important issues and involves a remarkably wide range of activities – technical, scientific, social, and economic. If successfully implemented it will have a substantial impact on the way conservation and sustainable use of the biodiversity of the Central Sahara region and desert biomes is carried out. The GOA will provide strong support and substantial financial commitment.

25. It is not without substantial risks because of its scale and complexity, its dependence on a high degree of capacity building and support, and its vulnerability to external factors. I have some doubts about the ability to put in place systems for the successful implementation of some of the activities (especially those involved in achieving output 7) in the time-scale indicated. With these reservations I recommend it for approval.

23 September 2001

Response to STAP Comments

1. *Paragraph 6.* The scarcity of biodiversity experts and protected area planners in Algeria has been clearly recognized and is reflected in the considerable international technical assistance foreseen to support the project. This technical input would be more detailed in the project document. International technical assistance will be mobilized during project implementation to assist 1) in daily project management through a Chief Technical Advisor with long-term experience in biodiversity conservation and natural resource management; 2) basic ecological inventories and biodiversity monitoring; 3) collaborative management and sustainable alternative livelihoods; 4) sustainable ecotourism; 5) IEC, etc.

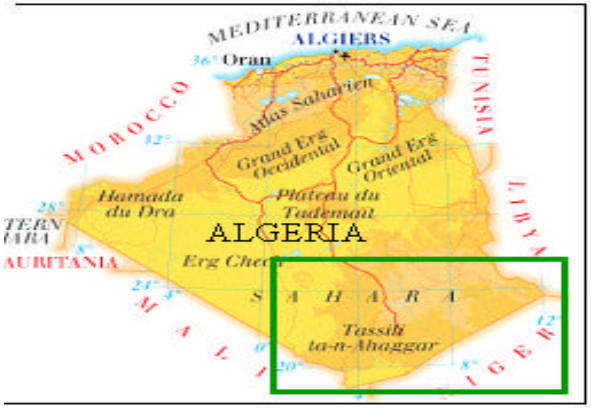
2. *Paragraph 7.* The two points raised - concerning eco-geographic studies and recovery plans targeting selected species of plants and animals - have been addressed. The relevant paragraphs in the main text of the brief and the logical framework have been revised accordingly and proposed modifications duly incorporated (see paragraphs 39, 40 and Annex C).

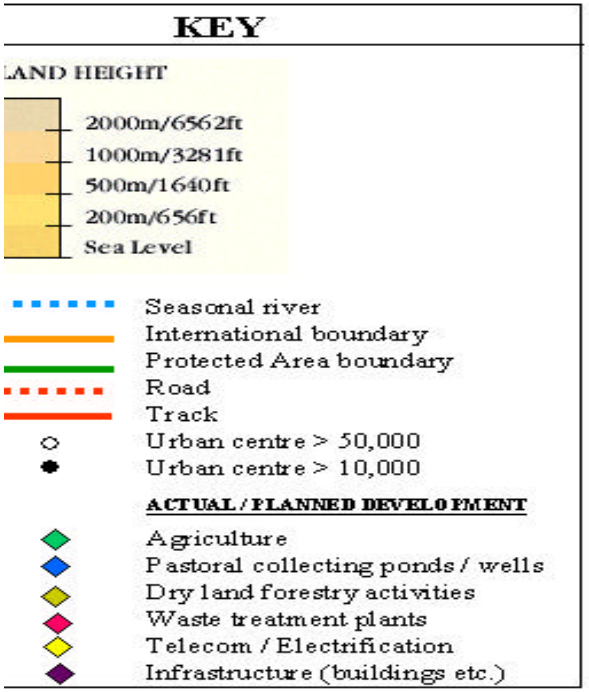
3. *Paragraphs 8 and 25.* It should be emphasized that the diverse initiatives foreseen under output 7 are small-scale demonstration activities, which have been identified through the participatory approach underpinning the PDF-B. The activities identified should provide a suitable entry point for the project to engage the local communities, while effectively complementing the collaborative management process, which is at the heart of the public participation strategy of the future project. As outlined in the brief, such a process will be strongly based on 'learning by doing' and the proposed 'micro-projects' will be further developed, tested and finely adapted prior to their implementation. It should also be underlined that, except for incremental technical assistance, no funds for output 7 will be appropriated from the GEF. Financial resources for the implementation of this output have already been secured from UNDP and the GOA and further co-financing is anticipated from other donors.

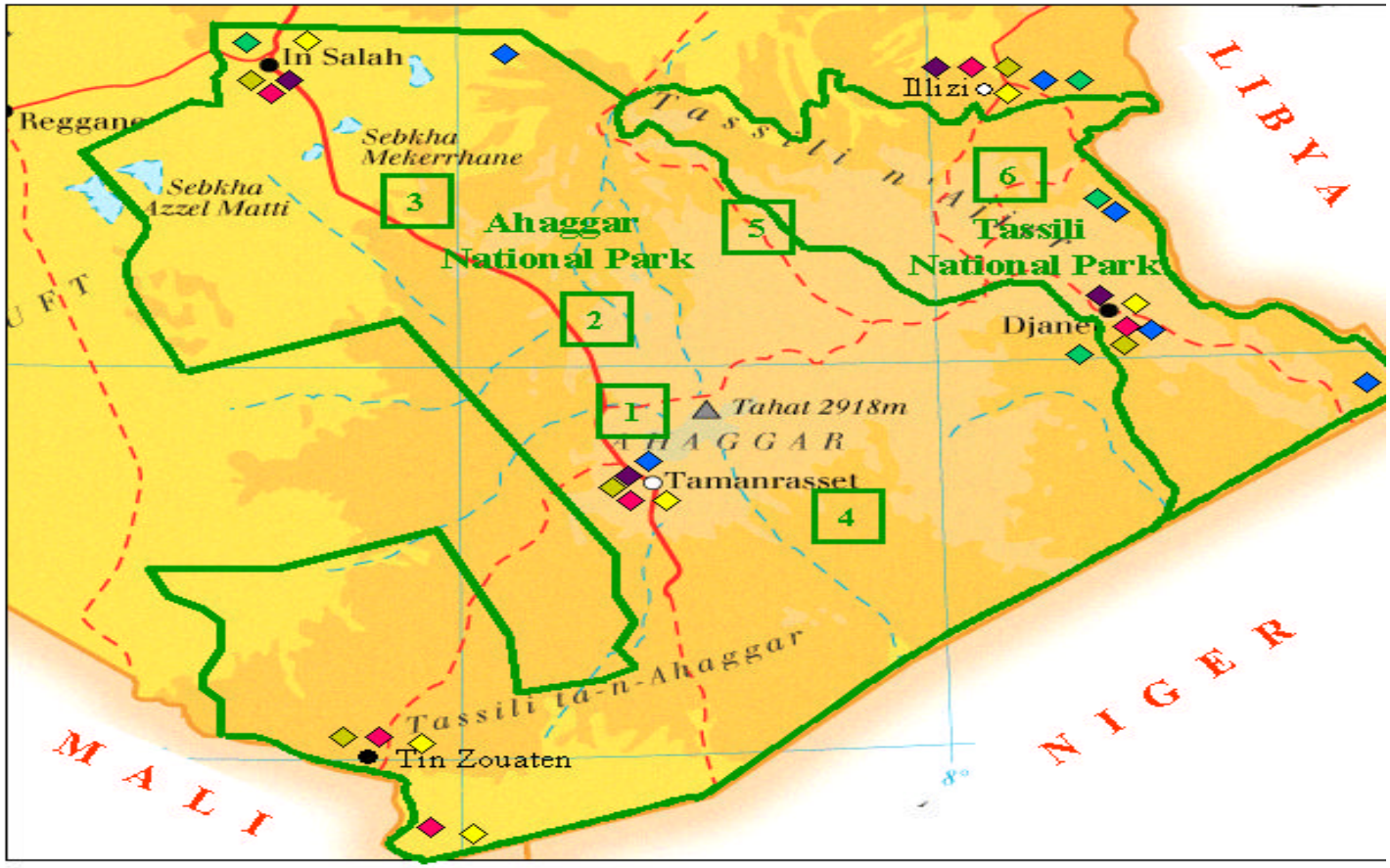
4. On the list of medicinal plants for cultivation, economically promising species with potential for cultivation have been proposed by the PDF-B national consultants after extensive consultations with local stakeholders in and around the villiges of Idelis, Tazrouk, Tahifet, Tehrhananet and in Tit, Abalessa, Enamgal, Amsal, Ein Gezam, and Ein Zawatin. This cultivation and marketing feasibility of this component would be assessed during the first phase of the project and recommendations will be tied to the adaptive and collaborative management objective of the project.

5. *Paragraph 25.* In the case of the Tassili Ahaggar project, the inevitable risks associated with any large-scale and complex biodiversity conservation initiative have been effectively minimized. According to the phased approach proposed for this intervention, a mandatory independent evaluation will occur after 3 years, its results being critical for graduation from the first to the second phase of the project and the release of further funds.

Annex E. Schematic map of project area







TASSILI – AHAGGAR ECOLOGICAL COMPLEX : CORE AREAS

1	Taessa Massif	3	Mouyidir Plateau	5	Erg of Tihoudayène
2	Tefedest Massif	4	Serkout region	6	Meddek Plateau

Annex F. Habitat and Site Descriptions

1. The Tassili n'Ajjer and Ahaggar National Parks, respectively situated in the wilayas of Illizi and Tamanrasset, southeast Algeria, cover a total area of 452,000 km, constituting the largest contiguous protected area in Africa and the second largest in the world. The Tassili n'Ajjer was established as a national park by Ministry of Culture Decree No. 72-168 in 1972. It was further designated as an historic monument in 1979 and declared as a World Heritage Site in 1982 due to its unique collection of pre-historic rock paintings and engravings. Finally it was enlarged to its current size of 72,000 km^2 and established as a Biosphere reserve in 1986. The adjacent Ahaggar National Park, covering an area of 380,000 km^2 was formally established in 1987. Due to its vast overall size and relative integrity, the Tassili - Ahaggar complex represents a key biodiversity site in the central Saharan ecosystem and - together with the ecologically connected areas of Fezzan, Air-Tenere and Adrar, in neighbouring Libya, Niger and Mali – it potentially constitutes one of the prime sites in the world for desert biome conservation.

2. Geologically, the region is constituted by the huge Tassili plateau, part of the Ordovician and Devonian sandstone layer and the extensive Precambrian crystalline massifs characterising the Ahaggar area. The plateau with an altitude that varies from about 1,500m in the north to 1,800m in the centre and south, owes its morphological structure and its unique network of steep-sided valleys to a succession of wet and dry periods in palaeoclimatic wet periods. The numerous Ergs were formed from the great lakes, present throughout the region until the end of the Upper Pleistocene. In some areas flat plateaux have been formed by fluvial action, their surfaces furrowed by narrow, deep gorges and dry river beds. Elsewhere wind erosion and the arid climate have strewn the plateaux with rock formations resembling known as "stone forests". The region is dominated by three main massifs of which the Atakor is the most important and highest with peaks of upto 3000 m (Ilaman, Tahat). To the north is the massif of Téfedest with peaks surpassing 2000 m and to the east the lower massif of Anahef. In the deeper valleys and depressions there are many temporary and permanent water holes or gueltas, three of which are currently being proposed as Ramsar sites.

3. The climate is hyper-arid to sub-arid, characterised by extreme meteorological variability and uncertainty. Mean annual rainfall ranges from 20mm to 100mm, with marked variations across years and seasons. Precipitation may be absent for several years at a given location, while elsewhere sudden rainfall may give rise to localised floods, which may lead in severe cases to drowning of livestock and humans. At altitudes above 2,400m rain may fall in any season, and in the winter, snow occasionally appears on the highest peaks. Mean annual temperature recorded at an altitude of 1,100m is about 20°C but absolute temperatures may range from -7°C to 50°C depending on altitude and season. Mean monthly relative humidity In the town of Tamanrasset is 17% at 13:00 hours in July, and 21% at the same time in December. The dominant wind is the north east trade wind.

4. The ecology of the Tassili-Ahaggar is characterised by the interpenetration of tropical and Mediterranean elements with Saharo-Sindien, Sudano-Deccan and Mediterranean species. Following an altitudinal gradient, three vegetational zones are generally recognised: tropical zone up to approximately 1,800 - 1,900m, a lower Mediterranean zone from 1,900 m to 2,300 - 2,400m and an upper Mediterranean zone from 2,400 to

the highest summits. Floristic diversity is presently estimated at about 300 species with high levels of endemism, locally reaching up to 50%. The most notable palaeo-endemic relict tree species is the cypress "tarout" *Cupressus dupreziana*, of which about 240 specimen remain. Out of the further 72 endemic species so far listed, 36 are considered endangered, the most notable being Wild olive (*Olea laperrini*) and myrtle (*Myrtus nivellei*), commonly growing at the bottom of wadis or beside permanent or temporary waterholes. Other endemic or rare species include *Potamogeton hoggariensis*, *Silene hoggariensis*, *Lupinus tassilicus Senecio hoggariensis*, *Ficus ingens*, *Boerhaavia viscosa*, *Trianthema pentandra*, *Spergularia fontenellei*, *Bergia suffruticosa*, *Hypericum psilophyton*, *Convolvulus fatmensis*, *Anticharis glandulosa*, *Utricularia exoleta* and *Phagnalon garamantum*. There are also many Sudanese flora elements such as the genera *Merrua*, *Salvidora* and *Callotropisa*. Rocky and sand species include *Mesembryanthemum gaussenii*, *Pseuderucaria clavata* and *Acacia scorpiodes*. In the extremely unpolluted fresh water of the Iherir valley, aquatic mosses give rise to travertine dams, waterfalls and pools. Under these conditions, riverine species occur such as *Typha* spp., *Juncus* spp., *Phragmites* spp., *Adiantum* and aquatic vegetation such as *Chara* spp., *Myriophyllum* spp. and *Potamogeton* spp. Other river-bed species include *Trianthema pentandra*, *Silene kiliana*, *Lupinus pilosus* and *Convolvulus fatmensis*. Trees and larger shrubs such as Tamarix are restricted in the channels of the dry river valleys.

5. The avifaunal component includes a total of 134 species of which 14 endemic to the region and 4 species first recorded during the PDF-B. The region is particularly important for resting migratory Palaearctic birds. Species recorded in the area include Golden Eagle (*Aquila chrysaetos*), Long-legged buzzard (*Buteo rufinus*), Bittern (*Botaurus stellaris*), Little bittern (*Ixobrychus minutus*), Night heron (*Nycticorax nycticorax*), Squacco heron (*Ardeola ralloides*), Purple heron (*A. purpurea*) White stork (*Ciconia ciconia*), Glossy ibis (*Plegadis falcinellis*), Short-toed eagle (*Circaetus gallicus*), Lesser kestrel (*Falco naumanni*), Quail (*Coturnix coturnix*), Spotted crake (*Porzana porzana*), Corncrake (*Crex crex*) and Stone curlew (*Burhinus oedicnemus*). Several Palaearctic species breed in the region including Coot (*Fulica atra*) and Moorhen (*Gallinula chloropus*) as well as a relict sub-species of Barbary partridge (*Alectoris barbara duprezii*).

6. The 36 or so mammals are mostly typical of arid climates, including 2 recently extinct species (*Oryx gazella*, *Addax nasomaculatus*) and 7 species of bats. Among the higher mammals, several species are reported as globally threatened or endangered in the IUCN Red Data Book, including Barbary sheep (*Ammotragus lervia*), Slender-horned gazelle (*Gazella leptoceros*) and, among the carnivores, Fennec fox (*Fennecus zerda*) and the flagship species cheetah (*Acinonyx jubatus*). Locally threatened species include gundi (*Ctenodactylus vali*) and large-toothed rock dassy or hyrax (*Procavia capensis*).

7. The Tassili-Ahaggar also supports 12 species of reptiles and 2 species of amphibians. Four species of fish, relicts of a more humid past climate are still found in some permanent gueltas. Among the invertebrates a large numbers of spiders and dragonflies are recorded including *Orthetrum ransonneti* and *O. sabina*.

Indicative list of globally significant species (threatened or endemic) recorded in the six core areas.

A. Plants

Species	Status	Level of threat	*Areas proposed for biodiversity conservation and intensive management*					
			Taessa	**Tefdest**	**Mouydir**	**Serkout**	**Medak**	**Tihoudayene**
Cupressus dupreziana	E	+++					X	
Ephedra major	E	+	X		X			
Ephedra altissima	E	++						
Aristida pallida	E	++			X			
Arsitida obtusa	E	++	X	X	X	X		X
Aristida sahelica	E	++	X	X	X	X		X
Aristida acutiflora	E	++	X	X	X	X		X
Coelachyrum oligobrachiatum [1]	E	++	X	X	X	X		X
Koeleria rohlfsii	E	++			X	X	X	
Bromus garamas [1]	E	++		X				
Ficus salicifolia var.teloukat	E	++	X	X		X		
Calligonum azel	E	+						X
Calligonum calvescens [1]								X
Mesembryanthemum gaussenii[1]	E	+++				X		
Dianthus crinitus	E-Sah.	++	X					
Silene Kilianii	E	++	X					
Crambe kralickii	E	++			X	X		X
Pseudorucaria clavata	E-Sah.	++						X
Matthiola maroccana	E, R	++			X			
Coronopus lepidioides	E	++			X		X	
Reseda alphonsii ssp. Barbuti	E Sah.	++					X	
Lupinus tassilicus	E. Sah	++					X	
Lotononis dichotoma	E	++	X	X				
Trigonella balachowskyi [1]	E	++					X	
Lotus jolyi	E	++	X	X			X	
Asrtragalus gombo	E	++		X		X		
Astragalus akkensis [1]	E Sah.	+++	X			X		
Astragalus pseudotrigonus	E Sah.	++		X				
Astragalus geniorum [1]	E	++	X	X				
Astragalus vogelii	E	++	X	X				
Erodium meynieri	E	++	X					
Fagonia longispina	E	++						
Fagonia flamandi[1]	E. Sah.	++		X				
Tribulus ochroleucus[1]	E	++			X			
Euphorbia calyptrata	E	++	X	X	X	X		X
Euphorbia dracunculoides	E-Sah	++	X		X	X		
Euphorbia balsamifera	E	++	X		X	X		
Pistacia atlantic[1]	E-N Africa	++	X					
Hypericum psilophytum	E	++	X	X				
Tamarix pauciovulata	E Sah	++	X	X	X	X		
Tamarix balansae [1]	E	++	X	X	X	X		

Tamarix getula	E	++	X					
Helianthemum geniorum [1]	E	++	X	X				
Myrtus nivellei	E	+++	X	X			X	
Limoniastrum guyonianum [1]	E-N Afr	++			X			
Olea laperrini[1]	E	++	X	X		X	X	
Glossonema gautieri	E	+	X					
Caraluma venenosa		+	X					
Convolvulus fatmensis [1]	E	+			X	X		
Hyoscyamus muticus ssp Falezlez	E	+			X			X
Cistanche violacea	E N Afr	++					X	
Echium pycnanthum	E N Afr	+	X	X	X	X		
Lavandula antinaea	E	+	X	X		X	X	
Marrubium desrti	E	++	X	X		X	X	
Salvia chudai	E	++	X	X		X	X	
Plantago psyllium var. parviflora	E		X					
Campanula bordesiana	E	++		X				
Phagnalon garamantum [1]	E	++		X				
Pegolettia dubiefiana[1]	E	++		X	X	X	X	
Anvillea radiata[1]	E	++	X			X		X
Chrysanthemum macrocarpum	E	+++		X				X
Pentzia monodiana	E	++		X	X	X		
Matricaria pubescens	E N Afr	++	X				X	
Atractylis aristata	E	++		X	X	X	X	
Typha elephantina	E	++						X
Typha australis		+	X				X	
Erianthus ravianna		+					X	
Pennisetum dichotomum,		+		X				
Panicum turgidum		+		X				
Calotropis procera		++		X	X		X	X
Leptadania pyrotechnica		++			X			
Leptadania heterophylla		+			X			
Bassia muricata,		+			X			
Cocculus pendulus		+			X			
Colocynthis vulgaris		+			X			
Linaria sagittata		++	X		X			
Echium humile		++	X	X	X			
Acacia radddiana[1]	E Afr	+++	X					X
Acacia seyal[1]	E Afr	++	X					
Acacia scorpioides[1]	E Afr	++	X					
Acacia laeta	E Afr	++	X			X		
Ziziphus lotus	E Afr	++	X					
Balanites aegyptiaca	E Afr	++	X	X				
Lavandula antinae	E	+			X	X		
Teucrium polium	E	+			X	X	X	
Ballota hirsuta	E	+		X	X	X		X
Dianthus crinitus		++		X	X			
Genista uniflora		+				X		
Globularia alypum		+		X				
Andropogon schoenanthus	E	+				X		
Silene hoggariensis	E	++		X	X			
Spergula fontenellei[1]	E	++	X		X			X
Paronychia chlorothyrsa var. hoggariensis	E	++		X				
Moricandia arvensis var.	E	++			X		X	

garamantum								
Malva aegyptiaca var.triphylla	E	++	X			X		
Senecio hoggariensis	E	++				X		X
Pituranthos scoparius var.fallax	E	++			X			
Salvia verbenaca ssp. Foetens	E	++		X	X			
Artemisia judaica ssp. Shariensis	E	++			X		X	
Beta patellaris var.monodiana	E	++		X	X			
Polycarpea confusa ssp.garamantum	E	++	X		X	X		
Diplotaxis acris var. duveyrierana	E	++		X	X			X
Reseda villosa var.garamantum	E	++		X	X	X		
Astragalus cruciatus var. garamantum[1]	E	+++	X		X		X	
Monsonia heliotropioides var.albiflora	E	++		X	X			
Tribulus terrestris	E	++			X		X	X
Peganum harmala var.garamantum	E	++						
Tamarix gallica var.leucocharis	E	++	X	X			X	
Anacyclus dissimilis var.australis	E	++		X	X			
Imperata cylindrica var.parviflora	E	+		X	X	X	X	
Aristida tunetana var.intermedia	E	+		X	X			X
Tamarix aphylla		++					X	X

[1] Species inincluded under national protection

B. Mammals and selected birds

Species	**Legal Status**	**Level of threat**	**Areas proposed for biodiversity conservation and intensive management**					
Scientific-English Name			**Taessa**	Tefdest	**Mouydir**	**Serkout**	**Medakk**	**Tihoudayne**
Struthio camelus-Ostrich	1	++++				(X)		
Canis aureus-Golden jackal	1	+	X	X				
Vulpes pallida-Pale fox	1	+	X	X	X	X	X	X
Vulpes rueppe-Sand fox	1	+	X		X		X	
Fennecus zerda-Fennec	1	+++	X	X				X
Lycaon pictus –African hunting dog	1	++				X		
Mellivora capensis-Cape ratel	1	++	X					
Poecilictis libyca-Libyan zoril	1	++		X	X	X		
Hyaena hyaena-Striped hyena	1	++						
Felis margarita-Desert cat	1	+	X			X		X

Felis sylvestris-Woodland cat	1	+			X	X		X
Acinonyx jubatus-Cheetah Ocelot	1 & 2	+++	X			X		
Equus asinus-Wild ass	1	++				X		X
Procavia capensis-Rock daman	1	+	X		X	X	X	X
Addax nasomaculatus	1	++++						
Oryx dammah-Oryx	1 & 2	++++						
Ammotragus lervia-Audad-Barbary sheep	1 & 2	++	X	X	X	X	X	X
Gazella dorcas-Dorcas gazelle	1	+	X		X			X
Gazella dama-Dama gazelle	1	++		X				X
Gazella leptoceros-Slender-horned gazelle	1 & 2	+++						X
Psammoys obesus-Desert rat	1	+	X	X	X	X	X	X
Hystrix cristata – Porcupine	1	++	X	X		X	X	
Massoutiera mzabi-M'Zab goundi	1	+	X	X	X	X	X	X
Milvus migrans	1	++	X	X	X	X	X	X
Milvus milvus	1	++	X	X	X	X	X	X
Falco naumanni	1 & 2	++	X	X				
Otus scops	1	+++		X	X			
Neophron percnopterus	1	++	X	X	X	X	X	X
Ciconia nigra	1 & 2	+++	X		X			
Ciconia ciconia	1 & 2	++	X	X	X		X	
Ardea purpurea	1 & 2	+++			X			
Elanus caeruleus	1	++	X	X	X			
Aquila chrysaetos	1	+++		X				
Ardea purpurea	1 & 2	++			X	X		
Pterocles lichtensteinii[1]	1	+++		X	X			
Pterocles coronatus	1	+++	X	X			X	
Pterocles senegallus	1	++	X	X		X		
Pterocles alchata	1	+	X	X	X	X	X	X

E: Endemic, +: vulnerable; ++ rare to nearly threatened; +++ highly (or globally) threatened; ++++ nearly extinct or extinct species. Categories on plant species conservation status match to a large extent with IUCN categories. [1] Species are under national protection; [2] Species is under international protection and/or recognised as globally threatened species.

C. Birds Species migrating through, visiting or nesting in the Ahaggar and Tassili NP

Species	**Bio-geographical status**	**Legal status**	**Level of threat**	**Occurrence in Tassili-Ahaggar**
Struthio camelus		National protection	E	?
Podiceps nigricollis	W	National protection	RR	X
Botaurus stellaris	W	National protection	RR	X
Ixobrycus minutus	M / W	National protection	RR	X
Nycticorax nycticorax	M / W	National protection	RR	X
Ardeola ralloides	M	National protection	RR	X
Bubulcus ibis	M / W	National protection	C	X
Egretta garzetta	M / W	National protection	R	X
Ardea cirenea	M / W	National protection	C	X
Ardea purpurea	M	National-international protection	RR	X
Ciconia nigra	M	National-international protection	RRR	X

Ciconia ciconia	M	National protection	R	X
Plegadis falcinellus	M / W	National-international protection	RR	X
Platalea leucorodia	M / W	National protection	R	X
Anser anser	M / W	National protection	RR	X
Anas penelope	W		C	X
Anas strepera	W	National protection	R	X
Anas crecca	W		C	X
Anas platyrhynchos	W / B		C	X
Anas acuta	M / W		C	X
Anas querquedula	M		C	X
Anas clypeata	M / W		C	X
Marmaronetta angustirostris	W	National-international protection	RR	X
Aythya nyroca	W	National protection	RR	X
Elanus caeruleus	M	National protection	RR	X
Milvus migrans	M	National-international protection	R	X
Milvus milvus	M	National protection	RR	X
Neophron percnopterus	M / B	National protection	C	X
Circus aeriginosus	M / S	National protection	R	X
Circus pygargys	M	National protection	R	X
Accipiter nisus	M / W	National protection	R	X
Buteo buteo	W	National protection	RR	X
Buteo rufinus	S	National protection	C	X
Aquila rapax	A	National protection	RRR	?
Aquila chrysaetos	B	National protection	RRR	X
Hieraaetus pennatus	M	National protection	C	X
Hieraaetus fasciatus	A	National protection	RRR	?
Falco naumanni	M	National-international protection	RRR	X
Falco tinnunculus	M / S	National protection	C	X
Falco biarmicus	S	National protection	RR	X
Falco peregrinus	W / S	National protection	R	X
Falco pelegrinoides	S	National protection	RRR	X
Alectoris barbara	S		C	X
Coturnix coturnix	M		C	X
Rallus aquaticus	M / W	National protection	RR	X
Gallinula chloropus	M / W		C	X
Fulica atra	W		C	X
Grus grus	W	National protection	RR	X
Himantopus himantopus	M / W	National protection	R	X
Recurvirostra avocetta	M / W	National-international protection	RR	X
Burhinuss oedicnemus	M / W	National protection	R	X
Cursorius cursorius	S		C	X
Glareola pratincola	M		R	X
Charadrius dubius	M / W		C	X
Charadrius alexandrinus	M / W		C	?
Vanellus vanellus	W	National protection	C	X
Calidris minuta	M / W	National protection	C	X
Calidris temminckii	M / W		C	X
Calidris alpina	M / W		C	X
Lymnocryptes minimus	M / W		R	X
Gallinago gallinago	M / W		C	X
Limosa limosa	M / W		C	X
Tringa erythropus	M / W		R	X
Actitis hypoleucos	M / W		R	X
Larus ridibundus	W		C	X
Pterocles lichtensteinii	S	National protection	R	X
Pterocles coronatus	S	National protection	R	X
Pterocles senegallus	S	National protection	R	X

Pterocles alchata	A		RR	X
Columba livia	S		C	X
Oena capensis	S		RR	X
Streptopelia turtur	W / S		C	X
Streptopelia senegalensis	S		C	X
Clamator glandarius	M	National protection	RR	X
Cuculus canorus	M	National protection	R	X
Tyto alba	S	National protection	R	X
Otus scops	W / B	National protection	R	X
Bubo ascalaphus	S	National protection	R	X
Athena noctua	S	National protection	R	X
Asio flammeus	M	National protection	RR	X
Caprimulgus europaeus	M	National protection	R	X
Caprimulgus ruficollis	M	National protection	R	X
Caprimulgus aegyptius	M / B	National protection	R	X
Apus apus	M		C	X
Apus pallidus	M / B		C	X
Apus melba	M		R	X
Merops apiaster	M / B	National protection	R	X
Merops persicus	A	National protection	RR	X
Coracias garrulus	M	National protection	R	X
Upupa epops	M / B	National protection	R	X
Junx torquilla	M / B	National protection	R	X
Ammomanes deserti	S		C	X
Ammomanes cincturus	S		C	X
Alaemon alaudipes	S		C	X
Eremopterix nigriceps	A		RR	?
Calandrella brachydactyla	M / W		R	X
Galerida cristata	S		R	X
Ptyonoprogne fuligula	S		C	X
Hirundo rupestris	M		C	X
Hirundo daurica	M		RR	X
Delichon urbica	M		C	X
Anthus campestris	M / W		R	X
Anthus cervinus	M / W		R	X
Anthus pratensis	W		R	X
Motacilla flava	M		C	X
Motacilla cinerea	M / W	National protection	R	X
Motacilla alba	M / W		C	X
Phoenicurus ochruros	M / W		R	X
Phoenicurus phoenicurus	M		R	X
Oenanthe isabellina	M		R	X
Oenanthe oenanthe	M		R	X
Oenanthe hispanica	M		R	X
Oenanthe deserti	A		R	X
Oenanthe moesta	S		R	X
Oenanthe lugens	S		R	X
Oenanthe leucopyga	S		C	X
Sylvia deserticola	W		C	X
Sylvia conspicillata	W		C	X
Sylvia cantillans	M / W		C	X
Sylvia melanocephala	W		C	X
Sylvia nana	S		C	X
Sylvia hortensis	M / W		R	X
Sylvia communis	M / W		C	X
Sylvia ruepelli	A		RR	?
Sylvia atricapilla	M / W		R	?
Phylloscopus bonelli	M		R	X

Phylloscopus collybita	M / W		C	X
Phylloscopus sibilatrix	M		R	X
Phyloscopus trochilus	M		R	X
Muscicapa striata	M		C	X
Ficedula hypoleuca	M		R	X
Turdoides fulvus	S		C	X
Oriolus oriolus	M	National protection	RR	X
Lanius meridionalis	S		C	X
Lanius senator	VP		C	X
Corvus ruficollis	S		C	X
Passer simplex	S		R	X
Lagonostica senegala	S		C	X
Euodice cantans	A		RR	X
Bucanetes githagineus	S		C	X
Emberiza striolata	S	National protection	R	X
Emberiza hortulana	M	National protection	R	X

Bio-geographical Status: S-Sedentary Species (present all the year with breeding status); B-Breeding; W-Wintering; M-Migrant;

Level of threat: A-Accidental; C-Common; R-Rare; RR-Very Rare; RR-Globally threatened

Annex G. Threats Analysis [11]

Based on the results of the project formulation workshop held in Tamanrasset during July 2000, the table below provides a summary of the main threats to biodiversity in the project region, their root causes and associated management issues and the main actions proposed to mitigate their influence.

Root Causes and Management Issues	Alternative Strategy (Design elements)
General Threats / Weaknesses	
a. Weak overall management capacity of PAMUs Lack of suitably qualified and trained personnel Lack of clear legal texts and statutes Limited knowledge of existing laws and inadequate application of regulations Lack of equipment and infrastructure for management activities b. Limited dialogue and coordination between park managers and local communities Insufficient involvement of local communities and civil society in the conservation and sustainable use of natural resources c. Insufficient public awareness d. Weak knowledge of natural ecosystems and biological processes e. Lack of adequate management plans for the two national parks	a. Institutional capacity for field conservation enabled through legal, human resources and infrastructure development – see Output 1. b. Collaborative management of protected areas is operational based on the adaptive, equitable and sustainable use of biodiversity resources – see Output 2. Ecotourism is managed to demonstrate innovative, environmentally compatible, economic activities meeting sustainable livelihood needs – see Output 3. Eco-development follows a biodiversity friendly approach and sustainable livelihoods are supported through financial and human resources targeted by government, development agencies and communities – see Output 7. c. Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation – see Output 4. d. Knowledge on the biodiversity and the natural ecosystem of Ahaggar and Tassili is provided, monitoring and evaluation of biodiversity is tested and a system is operational see Output 5. e. Management plans are developed and biodiversity conservation is firmly inscribed on the local development agenda–see Output 6.

[9] It should be emphasised that the Tassili-Ahaggar ecosystem is still fairly intact with relatively low levels of threats to biodiversity, largely due to low population density and the inaccessibility of the region. This provides a unique and rare opportunity for the project to achieve global biodiversity benefits and a high rate of success by strengthening biodiversity conservation and management capacity while promoting sustainable alternative livelihoods compatible with biodiversity conservation objectives.

Root Causes and Management Issues	Alternative Strategy (Design elements)
Insufficient coordination of activities at the level of the wilayas and of the two protected areas	
Proximate Threat: Overexploitation of fuel wood and medicinal plants	
a. Weakening of traditional management practices regulating the utilisation of natural resources b. High unemployment, poverty and lack of alternative sources of energy c. Increasing demand encouraging unregulated exploitation of medicinal plants for commercial purposes	a. Creation and strengthening of conservation-enabling institutions, which confer strong authority and status on legally sanctioned communal natural resource regimes (output 2). b. Promotion of energy alternatives by demonstrating low-cost, off-grid technologies and providing micro-credits for the distribution of appliances such as solar stoves and ovens (output 7). c. Pilot scheme to plant produce and market economically valuable medicinal plants (output 7).
Proximate Threat: Hunting	
a. Illegal hunting with vehicles and firearms, indiscriminate hunting for commercial purposes and weak enforcement of existing laws. b. Predator-control for protection of livestock (e.g. cheetah)	a. Formal and on-the-job training to policing, intelligence gathering, enforcement and reporting functions and extension of police powers to selected PAMU staff (output 1) b. Development of a compensation scheme for cheetah predation on livestock and enhanced veterinary services (output 2).
Proximate Threat: Overgrazing	
a. Scarcity and sub-optimal distribution of water points. b. Ineffective and unregulated rangeland management leading to sedenterisation of nomads	a. Support to extensive pastoral management through the establishment of water collecting ponds in improved rangelands (output 7). b. Strengthening of local tenure arrangements, rangeland custodianship and management practices (outputs 2 & 7)

Root Causes and Management Issues	Alternative Strategy (Design elements)
Proximate Threat: Habitat / landscape modification	
a. Absence of biodiversity friendly and conservation oriented land use planning Unregulated development of infrastructure, exploitation of quarries and solid waste and water treatment facilities b. High impact events such as car rallies (e.g. Paris-Dakar) c. Inappropriate animal husbandry practices	a. Development of biodiversity friendly and conservation oriented land use planning. Definition of legal procedures and regulations for licensing of economic activities within PAs and standardisation of monitoring, site inspection and environmental auditing protocols (output 1) b. Strengthening of the capacity of the PAMU and other regulatory bodies to license ecotourism activities according to best practice guidelines and ensure full compliance with procedures set out in the licenses and related EIAs (output 3) c. Improved animal husbandry schemes based on collaborative management as well as demonstrative goat-fattening schemes and the raising of local chicken varieties (output 7)
Proximate Threat: Uncontrolled tourism	
a. Unprofessional and unscrupulous tour operators b. Ineffective management of tourism activities c. Unregulated development of hotels and visitor facilities d. Excessive utilisation of water	a. Sensitise tourism operators, potential investors and other concerned parties about desert conservation and environmentally sound, sustainable desert tourism b. (i) Conduct training programmes for interpretation and guiding services and the management of visitor interpretation facilities; (ii) facilitate local, private sector initiatives in obtaining usufruct rights and leases for the development and operation of ecotourism facilities and services; (iii) design and implement in collaboration with the private sector and other stakeholders, a finely-targeted marketing strategy c. Strengthen the capacity of the PAMU and other regulatory bodies to license and monitor ecotourism activities according to procedures set out in the licenses and related EIAs Develop a biodiversity friendly ecotourism plan and formulate best practice guidelines for the development and diversification of ecotourism facilities and services-(See output 3)

Annex H. Public Participation Arrangements

An estimated 150,000 people, about 85% of the combined population of the wilayas of Illizi and Tamanrasset reside within the boundaries of the protected areas. About 134,000 inhabitants are concentrated in urban areas and smaller administrative centres while the remaining 16,000 - 17,000 mainly nomadic Tuareg live in the vast desert regions of the Tassili-Ahaggar. Tuareg confederations based in the two wilayas have strong economic links throughout the central Saharan region, and regular movements have been documented towards neighbouring Niger, Mali and Libya.

During the project preparation period, UNDP-GEF and the Government of Algeria, under the co-ordination of a cross-sectoral Steering Committee, have initiated a set of stakeholder consultations engaging key representatives of local NGOs and civil society - including more than 100 local associations and cooperatives – and selected members of relevant wilaya administrative and technical services. All main stakeholders were involved in the project formulation workshop held in Tamanrasset during July 2000 and the national validation workshop held at Illizi during January 2001.

In the project area, the management of biodiversity has traditionally relied on the highly flexible normative framework provided by Tuareg institutions with jurisdiction over specific territories and usufruct rights covering grazing, hunting, agriculture and other forms of biodiversity utilisation. The public participation strategy of the project will thus concentrate on the creation and strengthening of such conservation-enabling institutions conferring strong authority and status on legally sanctioned communal natural resource regimes (see output 2).

Public participation efforts will focus initially on the main urban centres and the six key biodiversity sites identified during the course of the PDF-B as suitable areas for the demonstration of management techniques to be replicated and applied on a wider scale in the Tassili-Ahaggar region (see schematic map, Annex E).

Based on the outcome of the consultative process initiated during the project formulation period, the public participation strategy underpinning the project may be outlined as follows:

- the project will support a processual approach, strongly based on 'learning by doing', which will be advanced through an interdisciplinary collaborative management (CM) team that will assist in the negotiation of CM agreements according to procedures detailed under output 2[12];

[12] Key steps in developing a collaborative management framework include (see output 2): (i) identification of territory or set of resources; (ii) evaluation of the range of functions and sustainable uses provided; (iii) stakeholder analysis; (iv) determination of functions, responsibilities, benefits and rights of stakeholders; (v) formulation of management priorities and/or site management plan; (vi) establishment of conflict-resolution procedures for implementing collective decisions; (vii) agreement on specific rules for monitoring, evaluating and reviewing the partnership.

- key stakeholders will be provided with extensive training and general orientation in conservation enabling management methods through the services of participatory appraisal specialists and experienced facilitators - members of the collaborative management (CM) team established by the project;

- establishment and organisation of local management committees with robust conflict mediation systems, low transaction costs and rooted in existing social networks, such as those administered by community elders;

- summoning of regular intra-community forums, bringing together community members and representatives from community-based groups in order to facilitate informal exchanges and resolve outstanding problems;

- convening of periodic general meetings of representatives from different management committees in order to share management experiences and ensure that management operations are co-ordinated;

- engage local NGOs with a well-proven track record in biodiversity conservation to support selected project activities, so as to build advocacy functions and a long-term twinning relationship with the PAMUs;

- identify and support selected representatives from local management committees and NGOs as members of the Protected Area Management Board (PAMB) including all key stakeholders in the management of the protected areas;

- establish and support a cross-sectoral Steering Committee to oversee project operations, approve annual work-plans and progress reports and ensure implementation of the recommendations of independent evaluations;

- support a sustained awareness campaign based on a wide range of Information, Education, Communication (IEC) tools and activities aimed at imparting conservation values to local communities and sensitising them to conservation-friendly land use strategies (see output 4);

- ensure that participatory monitoring techniques are employed to track social processes that have a bearing on conservation outcomes, through the systematic involvement of monitors from local communities in M&E activities (see output 5);

- develop and operationalise policies and management plans for the two National Parks based on innovative legal procedures allowing the PAMU to enter into effective collaborative management agreements with other parties such as stakeholder communities and the private sector and thereby incorporating the adaptive management framework underpinning the CM process and derived agreements (output 6);

- encourage both the public and private sectors to innovate and incorporate emerging best practices from biodiversity conservation initiatives through a flexible, non-sectoral, sustainable livelihood approach, supporting newly emerging local

government bodies and NGOs stemming from the ongoing twin processes of decentralisation and democratisation (output 7).

Annex I. Alternative Sustainable livelihood Projects

The micro-projects outlined below, foreseen under output 7, were analyzed and extensively discussed at the national workshop held at Illizi during January 2001. The GEF would pay the agreed incremental costs equivalent to removing barriers and mitigating impacts standing against conservation of globally significant biodiversity.

IMPROVED ANIMAL HUSBANDRY

Objective. Promote alternative livelihood options by providing poor sections of the local communities with incentives to improve animal husbandry practices and increase the value of by-products.

a) Goat Fattening Scheme

Description. Pastoral production constitutes one of the main economic activities in the areas of interest for conservation and is practised by over 14% of the active workforce in the south of Algeria. Currently, there are over 75,000 goats raised in the Tassili-Ahaggar region. The local Tuareg pastoral system is highly specialized with men essentially involved in camel breeding, while women are generally responsible for rearing of goats as well as tanning and leatherwork, and the production of butter and cheese. This project aims to enhance the capacity of local women by removing barriers standing against production, processing and marketing of high quality goat products, including yoghurt, cheese, butter, ghee, tanning and leatherwork.

Under the baseline, the Government of Algeria plans to promote the production of goat meat by establishing 20 pilot goat-raising schemes in buffer areas around the Tassili-Ahaggar. In each farm, the government aims to provide selected Tuareg families with about 20 goats to be fed on supplementary pasture, which would be planted in suitable agricultural areas (1 hectare each). Under the alternative, the project aims to complement the baseline by ensuring the proposed goat-fattening scheme does not lead to an increase in the overall goat number in the Tassili-Ahaggar. No goats will be imported to the area. Goats will be purchased locally, and a quota system will be introduced to keep the overall goat numbers to around the 75,000 head.

The project is coherent with Tuareg traditional pastoral lifestyles and was first proposed by representatives of the local Tuareg communities at the project formulation workshop held in Tamanrasset during July 2000. Among the 50 household representatives consulted, 95% have strongly supported the idea based on the increasing market demand for goat meat and milk. Currently milk production covers only 70% of the local market needs in Tamanrasset and 65% in th Illizi and Djanet areas.

Economic Feasibility (20 goats to be raised for 10 years. Cost is given in US$)

Costs		Unit price	Total ($)
Fixed cost	Goats	50 x 20 goats	1,000
	Building	256 $	256
Running cost			
	Labour	50 $ salary / month x 12 months x 10 years	6,000
	Transport	3 $ / month x 12 months x 10 years	360
	Veterinary	50 $ / year x 10 years	500
TOTAL			**8,116**

Revenue	Unit cost	Price ($)
1. $/Kg of Goat meat/	5$/kg x 14 goats born every year x 17 kg an average weight of meat/a goat x 9 years	10,710
2. $/Litre of milk[1]	- 0.3$/litre x 20 n° of goats x 1 litre average milk production/goat/day x 150 day/year average milking period x 10 years)	9,000
3. $/litre of yoghurt	- 0.6$ x 30,000 litre (total amount of milk in 10 years) x 0.7	12,600
4. $/kg of cheese	- 2$ x 30,000 litre (total amount of milk in 10 years) x 0.25	15,000
5. $/kg of butter		
6. $/kg of ghee	- 2.5$ x 30,000 litre (total amount of milk in 10 years) x 0.15	11,250
	- 2.5$ x 30,000 litre (total amount of milk in 10 years) x 0.15	11,250
7. $/Skin of goat	2$ x 14 goats slaughtered /year x 9	252
Total 1+7		**10,962**
- Profit from selling meat and skin	**10962 – 8116**	**2,846**
- Profit from yoghurt	**12600-8116** **15000-8116**	**4,484** **6,884**
- Profit from cheese	**11250-8116**	**3,134**
- Profit from butter	**11250-8116**	**3,134**
- Profit from ghee		

[1] It is assumed that 1 litre of milk produces 0.7 litre of yoghurt, 250gm of cheese, 150gm of butter and 150gm of ghee.

b) Chicken raising programme

Description. Overgrazing is partly caused by settled communities living in small villages within the parks. The workshop has therefore suggested setting up a parallel programme aimed at raising a local chicken variety known as “Ikhen”, for meat and eggs. This alternative livelihood would be offered as compensation for a reduced grazing pressure in core conservation areas and urban peripheries. This alternative would also help to

diversify local animal husbandry practices, thereby spread economic risk. An economic assessment of the scheme conducted at the Illizi workshop has proved to be positive (see below).

Economic feasibility (chicken raising programme involving 20 chicken)

Costs	Unit price	Total ($)
Chickens	22 chickens (2 chickens will be male) x 3$	66
Fodder: minimal as chicken feed on garden grass, cereal, household food residue, etc.		100/year
Veterinary: minimal as Ikhen chickens are adapted to the Shara conditions and hardly suffer from disease. Sick chickens are usually slaughtered.	10$/year for 20 chickens	10
Total		**186**
Revenue		
Eggs	0.15$ x 150 eggs/year x 20 chickens	450
Meat of new born chicken after 1 year[1]	7 chickens are expected after the first year x 3$	21
Total		**471**
Profit in one year		**285**

[1] New born chickens could also be raised for eggs.

EXTENSIVE PASTORAL MANAGEMENT

Objective. Promotion of extensive pastoral management through the establishment of water collecting ponds in rich under-utilized pastoral areas and by promoting collaborative management and the revival of customary grazing regimes.

Description. In the Government investment plan for the two parks, the MOA aims to dig about 95 wells and boreholes in various pastoral areas within the Tassili Ahaggar region. In an attempt to decrease grazing pressure, the project will support the digging of collecting ponds in rich rangelands instead of the planned wells and boreholes. Collecting ponds are more adapted to the extensive Tuareg pastoral practices. In good years families will gather around collecting ponds to have access to water and more productive rangelands, whereas in bad years with limited rainfall collecting ponds will dry-up and more extensive transhumance will ensue.

The GEF increment for this component will cover surveying costs to identify locations for collecting ponds, mitigating risks associated with digging such ponds and the costs for brokering self-enforcing agreements with local communities to ensure that grazing around newly built collecting ponds is regulated and environmentally friendly.

MEDICINAL PLANTS

Objective. Alleviate pressure caused by the random collection of native endemic and endangered medicinal plants in the Tassili-Ahaggar region, by providing local farmer communities with adequate incentives to plant, produce and market economically valuable medicinal plants.

Description. This project will optimise biodiversity friendly agricultural initiatives to be supported by the Government in an area of about 2.000 ha within the two national parks. PAMU-driven negotiations will be supported in order to involve local stakeholders in: (i) the design of collaborative collection agreements and management frameworks so as to control random plant collection from sensitive areas within the two parks; (ii) support local stakeholders to cultivate about 250 ha (divided among 500 beneficiaries) with locally adapted medicinal plants such as *Artemesia herba alba, Origanum* and *Thymus (*see below, list of medicinal plants proposed for cultivation); (iii) facilitate the institutionalisation of the scheme by delegating local NGOs to manage activities in collaboration with local community groups; (iv) demonstrate drying, packaging and storage methods.

The GEF will pay incremental costs equivalent to ensuring sustainable collection agreements brokered with local community representatives over their rights to collect and use medicinal plants, the costs of mitigating negative impacts and monitoring, the removal of barriers including technical, information and market barriers, the introduction of protection schemes, and all necessary consultations, training and awareness activities. Tuareg farmer groups in coordination with local NGOs have showed willingness to take part in such an alternative scheme. The following areas have been selected: Tamanrasset: (Abalessa-300ha, Tarat-40ha, In Amguel-150, Tazerouk-200ha, Ideles-250, Igherghar-250ha, Abdenez-I & Abdenez II-200ha); Illizi: (Illizi-50, Tarat-40ha, Emihro-30ha, Tamidjart-30ha, Afra-30ha, Ifni-20ha, Wad Samin-30ha, Fadnoun-20ha, Djanet-20ha, Tardjart-20ha, Zerwas-20ha, Ifri Endaberan-40ha, Burj El-Hawas-40ha, Dedar-20ha, and Ihrir-10ha).

Economic Feasibility Comparison between the prices of dry matter collected from the wild vs. the price of produce generated from the same dry matter after cultivation

Cost	**Unit price /0.5 ha**	**Total ($)**
$ / kg of dry matter of medicinal plants collected in the wild (average)	5 $ x 50kg (seeds to be planted)	250
Irrigation and maintenance	50 $/ 0.5ha	50
Total[a]		**300**
Revenue		
$ / kg of dry matter of medicinal plants cultivated and sold in the market	5 $ x 4 [1] x 50	1000
Total[b]		1000
Profit b – a		**700**

[1] on average 1 kg of seeds produces approximately 4 kg of medicinal plants /season.

List of medicinal plants proposed for cultivation and Areas assigned for medicinal plant cultivation:

Species	Wholesale price DA / kg	Market price DA / kg	Areas assigned for medicinal plant cultivation [1]
Artemisia judaica subsp sahariensis	200	300	B
Artemisia campestris subsp. glutinosa	200	300	A
Myrtus nivellei	300	400	A
Cymbopogon schoenenthus	200	300	A
Acacia arabica	40	70	B
Pituranthos scoparius subsp falax	200	300	A
Solenostemma argel	200	300	B
Balanites aegyptiaca	100	200	B
Ziziphus mauritiana	100	200	B
Salvia chudaei	200	300	A
Teucrium polium subsp polium	200	300	A
Matricaria pubescens	200	300	B
Cotula cinerea	200	300	B
Asteriscus graveolens	200	300	B
Bascia senegalensis	300	400	B (especially in In Guezam and In Zaouatin)

[1] A: High Altitude Sites >1200m: Idelis, Tazrouk, Tahifet, Tehrhananet
B: Low Altitude Sites <1200m: Tit, Abalessa, Enamgal, Amsal, In Gezam, and In Zawatin

ENERGY ALTERNATIVES

Objective. Alleviate anthropogenic pressures on firewood by providing local Tuareg communities with alternative options allowing rational collection of deadwood and by promoting the use of energy efficient alternatives including simple solar energy technologies.

Description. Over-collection of firewood is a serious problem in the Tassili-Ahaggar region with impact zones concentrated around urban areas. The Algerian public company SONELGAZ currently supplies rural areas in the south of the country with bottled gas at subsidized prices (2$/bottle). In the medium term the Government of Algeria will remove the subsidy of 7$/bottle, allowing the cost of gas to increase to $9-10/bottle - in line with current market prices. This cost is prohibitive for the poorest sections of Tamanrasset and Illizi society and will inevitably lead to the intensification of

firewood collection. In order to mitigate projected adverse effects, this project will promote energy alternatives by setting up a credit scheme to support the introduction of solar technology applications and energy efficient options including solar ovens and solar heaters. The credit scheme will enable the poorest sections of the local communities to purchase solar equipment necessary for cooking and heating. The beneficiaries will obtain the equipment on joining the scheme while payments will be arranged in small weekly instalments based on amounts equivalent to the cost of weekly firewood purchase or collection. The solar-credit scheme would be set up as follows: (i) seed money to be contributed by the GOA and GEF; (ii) equipment to be sold through soft loans subsidized by the credit scheme estimated at 60% of the original cost of introduced solar technology.

The GEF will assist in covering the agreed incremental costs equivalent to mitigating negative impacts, through the removal of barriers (technological and technical), setting up four demonstration units in each park, training, consultations, awareness raising and overall monitoring of the scheme.

Economic Feasibility. (Gas Bottles vs. Solar Energy to be used for lighting and water heating)

	Actual price of bottled gas	N° of bottle gas / household /year	Total real cost (without Gov. subsidy)	Total real cost for 10 years
Unsubsidised price	9$	12	108$	1080$
Subsidized price	2$	12	24$	240$

Solar Energy

Item	Unit price including installation
Public Lighting	$1282
Domestic lighting	$769
Solar pumps	$650
Solar water heater	$800
Solar Oven	$750

LAND REHABILITATION

Objective. Enhance biological diversity and support alternative livelihood of local communities within the two parks by planting native fodder species in highly degraded rangeland areas.

Description. There are several areas within the two parks, which have been subjected to anthropogenic pressures, which have resulted in overgrazing and over-utilization of vegetation for firewood. As part of the baseline, the government will support the rehabilitation of about 2,000 hectares of degraded rangelands within the Tassili - Ahaggar region with native fodder plants (such as *Acacia* spp.), thereby promoting rangeland biological diversity. Under the GEF alternative, the project will ensure that

rehabilitation of degraded areas following a biodiversity-friendly approach compatible with the zoning and long-term management of the two parks. The GEF will cover the cost of surveying to ensure selection of proper locations for rehabilitation, outside zones/areas set aside for *in situ* conservation. The sites so far identified include: (i) Tazrouk, Ideles, Tahifet, Amsel, Slenkine, Tahart, Tigal areasnaoune, and Tiaarert in the Ahaggar National Park and (ii) Borj El-Haoues, Tabaket, Ihrir and Dider in the Tassili National Park.

ECOTOURISM SERVICES

a) Traditional handicrafts

Objective. Support local women in the Ahaggar and Tassili NPs by providing financial incentives to develop and market traditional handicraft products.

Description. The GoA will fund activities to attract tourism under project, and as tourist numbers increase The GoA will fund activities to promote an increase in craft manufacturing. These activities will be offered in compensation for reduced grazing levels in core conservation areas and urban peripheries. Interested local NGO's will be encouraged to work with local communities in coordination with the park management teams to promote the design, manufacturing and marketing of selected handicraft products. The scheme will include weaving, jewellery and leather products. A total of 30 women from each wilaya will be trained by the project on how to weave traditional clothes, hats, tents, design traditional jewels and leather-made products (bags, belts, decorated items). Memorandums of understanding will be established between the project and beneficiaries and a long-term marketing strategy will be developed and adopted.

Economic Feasibility. Costs are given only for the first year. Some fixed costs will only be faced during the 1st year of the project, thus profitability will increase in the long term.

Weaving	**Unit cost / kg**	**Price**	**Total ($)**
Animal wool	1.5$ (Average weight/100 kg)	150 $	
Camel hair	10$ x 100	1000 $	
Labour	50$/month x 12	600 $ / year	
Equipment	200 $	200 $	
Training	100$/year /woman	100 $	
Total			**2,050**
Revenue			
Animal wool	7$ x 100	700 $	
Camel hair	70$ x 100	7000$	
Total revenue			**7,700**
Profit			**5,650**

Jewels	Price / kg	Subtotal
Raw material		
- Silver	200 $ x 10 kg each	2000 $
- Copper	50 $ x 10 kg each	500 $
Labour	110 $ / month x 12	1320 $
Equipment	1000 $	1000 $
Training		100 $
Total		**4920 $**
Revenue		
- Silver	1000 $ x 10 kg	10 000 $
- Copper	250 $ x 10 kg	2500 $
Total		**12500 $**
Profit		**7580 $**

Leather	Unit price	Subtotal
$ / goat skin	2 $ / skin x 100	200 $
$ / Camel skin	5 $ / skin x 50	250 $
Labour	100 $ / month x 12	1200 $
Equipment	500 $ / year	500 $
Total		**2150 $**
Revenue	10 $ x 100 skins	
Goat	30 $ x 50 skins	1000 $
Camel		1500 $
Total		**2500**
Profit		**350 $**

b) Camel-based ecotourism services

Objective. Promote sustainable and biodiversity friendly eco-tourism using camels as a means of transport for tourists visiting the two parks.

Description. Under the baseline, tourism is privately organized and is carried out using four-wheel drive vehicles, which are negatively impacting fragile habitats. About 150 tourist agents are currently active in the two wilayas. Under the alternative, the project aims to introduce camels as a means of transport for tourists, in order to minimize the impact of vehicles on highly fragile environments. Under this scheme, the project will broker agreements with local tourist contractors and Tuareg families, allowing camel-based tourist activities/visits in certain areas according to procedures set out in the zoning and management plans.

Families with camels participating in the eco-tourist scheme will also benefit from a camel dairy production scheme to enhance the value of camel milk products. Camel milk is currently of low market value and so an income generating activity targeting local women will assist in processing camel milk into higher value products such as cheese, yoghurt and butter.

By supporting the brokering of self-enforcing agreements and collaborative monitoring, the project would ensure that such an activity would not lead to an increase in the overall number of camels and thus reduce its potential impact on the environment.

Economic feasibility.

Items	Unit price	Total ($)
Building	300 $	300
Labour	75 $ / month x 12 x 10 years	9,000
Veterinary	50 $ / year x 10 years	500
Transport	50 $ / year x 10 years	500
Total w. out fodder		**10,300**
Revenue from milk production, meat, cheese or butter and ecotourism		
$/kg camel meat	3$ x 70 kg x 3 x 9 years	5,670
$/kg of cheese- butter	2.5$/kg x 16200 litre of camel milk produced by 5 camels in 9 years x 0.2 an average amount of butter-cheese produced from 1 litre	8,100
Total		**13,770**
Profit Cheese-butter & meat	13770-10300	3,470
$/Eco tourism/ tour	10$ x 1 tours/day x 5 camels x 180 days (6 months active tourists) x 10 years	18,000
Total		**21,470**

Annex J. National Technical Capacity to Execute Project Activities

It is anticipated that the key institutions responsible for the overall execution of the project will be the Protected Area Management Units (PAMUs) of the Tassili National Park (TNP) and the Ahaggar National Park (ANP). The two PAMUs collectively employ over 600 staff, including a full complement of technical and management personnel - permanently recruited by the Ministry of Communication and Culture (see section on project context). Additional technical staff will be permanently recruited by the PAMUs during the course of the project, and several national and international experts will be employed on a full-time or part-time basis.

As outlined in the table below, the PAMUs will be assisted in the implementation of selected components / activities of the project through the services of: (i) local NGOs with a well proven track record in the conservation of biodiversity and cultural heritage resources; (ii) specialised private sector companies; (iii) national research institutes already active in the Tassili-Ahaggar region; (iv) relevant wilaya technical services.

Project Outputs	Cooperating Institutions and Technical Inputs
Output 1. Institutional capacity for field conservation enabled through legal, human resources and infrastructure development.	The following inputs will complement PAMU – executed activities: (i) a national expert to assist with legal/institutional matters; (ii): a full-time training team composed of four experienced national trainers for in-service training and recycling of PAMU staff; (iii) a private sector construction company sub-contracted according to national/UNDP tender procedures for the design and development of park infrastructure.
Output 2. Collaborative management of protected areas is operational based on the adaptive, equitable and sustainable use of biodiversity resources.	Key activities will be implemented through the services of an interdisciplinary collaborative management (CM) team, composed of four technically competent and dedicated professionals including biodiversity and participatory appraisal specialists and experienced facilitators.
Output 3. Ecotourism is managed to demonstrate innovative, environmentally compatible, economic activities meeting sustainable livelihood needs.	Selected activities under this output will be sub-contracted to a national private sector company with previous experience in the Tassili-Ahaggar region, specialising in the development and marketing of ecotourism services in Algeria.

Project Outputs	Cooperating Institutions and Technical Inputs
Output 4. Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation.	Under the umbrella of suitable local NGOs such as the Amis du Tassili, key activities will be outsourced to a core of professional journalists active in the local and national press and media and selected educationalists serving in primary and secondary schools of the Tassili-Ahaggar region.
Output 5. Monitoring and evaluation of biodiversity resources, their utilisation and management has been tested, and a system is operational.	A Biodiversity Monitoring Unit will be established at PAMU HQs and field units in key outposts and field stations. As a basis for the establishment of a long-term partnership with the PAMU, selected components of the programme will be outsourced to the following institutions already engaged in monitoring and research activities in the Tassili-Ahaggar region,: (i) the National Forestry Research Institute (INRF); (ii) the National Meteorological Office; (iii) the National Research Centre for Arid Regions (CRSTRA).
Output 6. Management plans are developed and biodiversity conservation is firmly inscribed on the local development agenda.	This output will rely on a PAMU-driven cooperative effort involving in-house technical staff, key project advisors and partner organisations. A small external team of planners will provide specialist inputs to ensure incorporation of management guidelines into formal management plans integrating biodiversity conservation with wider development planning at wilaya and national levels.
Output 7. Eco-development and sustainable livelihoods are supported through financial and human resources targeted by government, development agencies and communities.	Key activities under this output will be delivered through the following local organisations and decentralised government bodies located at wilaya level: (i) the pastoralists associations and the Agriculture department for the improved animal husbandry schemes; (ii) the pastoralists associations and the Forestry department for the extensive pastoral management and land rehabilitation schemes; (iii) the associations of agriculturists and the INRF for the medicinal plant scheme; (iv) the department of Environment and the public company SONELGAZ for the solar and energy alternatives scheme; (v) the handicraft associations and the department of tourism for the diversification of ecotourism services.

Annex K. Extended socio-economic profile

The wilaya of Tamenrasset and Illizi are extremely sparsely populated, with around 170,000 people in 841,200 Km^2 (or around one person per 5 Km^2). Around 90% of the population lives in the urban centers of the two wilaya, and the majority in the two administrative centers of Illizi and Tamenrasset. The two wilaya are not rich in natural resources. They have few mineral resources, with the exception of small oil deposits near Insalah, gold deposits on the southern Algerian border at Amesnessa and Tirek, and uranium deposits at Tamenrasset. The former two are both outside of the two National Parks, and there are currently no plans to exploit the uranium deposits. Agricultural potential in the two wilaya is also extremely limited because of the very low rainfall and poor soil fertility. Traditionally livelihoods have revolved around extensive nomadic pastoralism, small gardens around water sources, and the caravan trade. Since independence the GoA has established a presence in the two wilaya to provide economic development particularly for the indigenous nomadic Tuareg, and to maintain security along borders with Libya, Mali and Niger.

Today the main forms of economic activity in two wilaya are: government administrative employment, (no data on security forces) associated dependent small businesses, and agriculture. Almost 40% of the workforce in both wilaya, are government administrative employees. There influx is also the main cause of population expansion in two wilaya, by around 130,000 from 1966 to 1998. Local small businesses accounting for 20% of the workforce, including retail, transport, restaurant, hotel and engineering enterprises are heavily dependent on administrative salaries and government contracts for their business.

Agriculture is the second most important economic sector, employing just under 30% of the work force. Arable land covers just over 27, 000 hectares or less than 0.01% of surface area of the two wilaya, over 60% of which is located near Tamenrasset[13] and Illizi. Crops include cereals, vegetables, root crops, and fodder, are for home consumption and local markets. Cultivated areas include small home gardens irrigated by surface and near-surface water using traditional irrigation technology; cooperatively managed gardens often irrigated from deeper wells; and larger-scale more intensively managed farms, irrigated from deeper aquifers and using modern pivot-irrigation technology. Around 150,000 head of camel, goat and sheep are estimated to exist in the two wilaya. The goats and sheep are mostly managed under a semi-nomadic regime, around the urban peripheries and in tribal “resident areas”, where diet can be supplemented with fodder and feed concentrate. Meat, skins and milk are consumed by the family or sold locally. Men herd the camels, ranging as far as Niger, Mali and Libya in search of pasture and water. Camels are rarely slaughtered, as they represent the Tuaregs’ wealth. They are most valued for transport (people and trade goods), milk, camel hair and for trade. With urbanization it has become increasingly common for sedentary owners to hire shepherds to mange their camel herds.

The tourist industry has become unimportant to the local economy with the recent decline of visitor numbers. In 1999, a recorded 500 visitors to the two wilaya provided employment for less than 1% of the workforce. A legacy of enterprises do remain from

[13] In the case of Tamenrasset the cultivated area is located in a 150km radius around the town.

prior to 1993, when the sector was buoyant. Today just over 70 tourist agencies, a number of hotels, restaurants and craftsman have survived in part by diversifying their business, others have closed. The re-emergence of tourist activity is however anticipated, primarily because of the archeological and cultural richness in the two parks, the excellent wilderness experience the two parks offer, and the stable security situation in the south of Algeria. Although the GoA is only investing around USD 40,000 annually to promote tourism, direct flights from Europe to Southern Algeria are once again available, and French, German, Italian, and Spanish tour operators are organizing trips there. A slow build-up of activity is expected.

Details of the GoA's planned investments are documented in an Annex B, and are shown on map xxx, however a brief overview follows. The GoA will maintain investment in health, education, municipal services, poverty alleviation schemes and other basic social services in the wilaya. New investment has been earmarked for road maintenance and extension, new telecommunication infrastructure and airport improvements. This is expected to increase administrative capability and encourage private sector investment, particularly in the tourist and agriculture sectors. In the agricultural sector the GoA's priority is to encourage private investment. Management of agricultural cooperatives has been privatized, and extension services are being strengthened. However public investment is now limited primarily to irrigation, wind breaks and afforestation, while subsidies are limited to tax exemption, per head payments for the birth of camel calves, and a range of support to small farmers to alleviate poverty. This policy has most affected cooperatives. Some cooperatives have thrived from the change in management, while others have since closed down. However in new areas prepared with public money to attract private enterprise there is only a 35% occupancy rate, in part indicating the marginal economic potential of more intensive large-scale irrigated agriculture in the two wilaya.

Changes in pastoralism have been more gradual, and the reasons for them more difficult to determine. Between 1987 and 1999 there has been an absolute decline in head of sheep and goats in the two wilaya by 35% and 11% respectively, while head of camel have increased by 22%. This is in part due to GoA's reduced support for feedstuff, on which sheep and goats partly depend, while a per head subsidy for new-borne camel calves has boasted the profitability of herding. The timing of migratory patterns over the Algerian border with statistical surveys, also effects the number camels recorded. A more important trend has been the change in herding practices in open rangeland. The GoA owns all land in the Sahara but recognizes traditional tribal rangeland usufruct rights. None-the-less the authority of tribes to uphold their traditional rights has been heavily eroded, with immigration by non-indigenous people to the area and an official parallel judicial system, ill-equipped to uphold verbal agreements. Anecdotal evidence suggests a shift towards open access land tenure rules, bringing the most productive pasture, which also tend to be biologically rich and diverse, under increasing pressure from herders without traditional rights. The tribal practices of regulating the temporal and spatial intensity of grazing in valuable pasture has thus become difficult to maintain, and the sustainability of rangeland management in these areas is now questionable. While the GoA has been reluctant to arbitrate usufruct disputes, they are now looking at co-management arrangements between the park authorities and rangeland users as a means to arbitrate agreements.

Arrangements would also need to extend to other rangeland usufruct such as water abstraction and fuel wood collection. The erosion of traditional usufruct rules is particularly evident around urban areas where there are higher concentrations of non-indigenous people. However Tuareg culture is evolving as they come into contact with, and in-some cases assimilated into, the modern Algerian socio-economy, and it is changing rangeland etiquette far beyond the urban periphery.

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